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SENATE

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116–197

ADVANCED GEOTHERMAL INNOVATION LEADERSHIP ACT OF 2019

JANUARY 7, 2020.—Ordered to be printed

Ms. MURKOWSKI, from the Committee on Energy and Natural
Resources, submitted the following

R E P O R T

[To accompany S. 2657]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 2657) to support innovation in advanced geothermal research and development, and for other purposes, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and recommends that the bill, as amended, do pass.

AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Advanced Geothermal Innovation Leadership Act of 2019” or the “AGILE Act of 2019”.

SEC. 2. UPDATE TO GEOTHERMAL RESOURCE ASSESSMENT.

Section 2501 of the Energy Policy Act of 1992 (30 U.S.C. 1028) is amended—

(1) by redesignating subsections (a) and (b) as subsections (b) and (d), respectively;

(2) by inserting before subsection (b) (as so redesignated) the following:

“(a) DEFINITION OF ENHANCED GEOTHERMAL SYSTEMS.—In this section, the term ‘enhanced geothermal systems’ has the meaning given the term in section 612 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17191).”;

(3) by inserting after subsection (b) (as so redesignated) the following:

“(c) UPDATE TO GEOTHERMAL RESOURCE ASSESSMENT.—The Secretary of the Interior, acting through the United States Geological Survey, and in consultation with the Secretary of Energy, shall update the United States geothermal resource assessment carried out by the United States Geological Survey, including—

“(1) with respect to areas previously identified by the Department of Energy or the United States Geological Survey as having significant potential for hydrothermal energy or enhanced geothermal systems energy, by focusing on—

“(A) improving the resolution of resource potential at systematic temperatures and depths, including temperatures and depths appropriate for power generation and direct use applications;

“(B) quantifying the total potential to coproduce geothermal energy and minerals;

“(C) incorporating data relevant to underground thermal energy storage and exchange, such as aquifer and soil properties; and “(D) producing high resolution maps, including—

“(i) maps that indicate key subsurface parameters for electric and direct use resources; and

“(ii) risk maps for induced seismicity based on geologic, geographic, and operational parameters; and

“(2) to the maximum extent practicable, by coordinating with relevant State officials and institutions of higher education to expand geothermal assessments, including enhanced geothermal systems assessments, to include assessments for the Commonwealth of Puerto Rico and the States of Alaska and Hawaii.”; and

(4) in subsection (d) (as so redesignated), by striking “necessary” and inserting “necessary”.

SEC. 3. GENERAL GEOTHERMAL RESEARCH AND DEVELOPMENT PROGRAMS.

Section 614 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17193) is amended by adding at the end the following:

“(d) OIL AND GAS TECHNOLOGY TRANSFER INITIATIVE.—

“(1) IN GENERAL.—The Secretary shall support an initiative among the Office of Fossil Energy, the Office of Energy Efficiency and Renewable Energy, and the private sector to modify, improve, and demonstrate the use in geothermal energy development of relevant advanced technologies and operation techniques used in the oil and gas sector.

“(2) PRIORITIES.—In carrying out paragraph (1), the Secretary shall prioritize technologies with the greatest potential to significantly increase the use and lower the cost of geothermal energy in the United States, including the cost and speed of small- and large-scale geothermal drilling.

“(e) COPRODUCTION OF GEOTHERMAL ENERGY AND MINERALS PRODUCTION PRIZE COMPETITION.—

“(1) IN GENERAL.—The Secretary shall carry out a prize competition under which the Secretary shall award prizes to demonstrate the coproduction of critical minerals (as defined by the Secretary of the Interior on the date of enactment of the AGILE Act of 2019) from geothermal resources.

“(2) REQUIREMENTS.—A demonstration awarded a prize under paragraph (1) shall—

“(A) improve the cost-effectiveness of removing minerals from geothermal brines as part of the coproduction process;

“(B) increase recovery rates of the targeted mineral commodity;

“(C) decrease water use and other environmental impacts, as determined by the Secretary; and

“(D) demonstrate a path to commercial viability.

“(3) MAXIMUM PRIZE AMOUNT.—The maximum amount of a prize awarded under paragraph (1) shall be \$10,000,000.

“(f) DRILLING DATA REPOSITORY.—

“(1) IN GENERAL.—The Secretary shall, in coordination with the Secretary of the Interior, establish and operate a voluntary, industry-wide repository of geothermal drilling information to lower the cost of future geothermal drilling.

“(2) REPOSITORY.—

“(A) IN GENERAL.—In carrying out paragraph (1), the Secretary shall collaborate with geothermally significant countries, such as Iceland, Switzerland, Kenya, Australia, the Philippines, and any other relevant country, as determined by the Secretary.

“(B) DATA SYSTEM.—The repository established under paragraph (1) shall be integrated with the National Geothermal Data System.”.

SEC. 4. ENHANCED GEOTHERMAL RESEARCH AND DEVELOPMENT.

(a) DEFINITION OF ENGINEERED.—Section 612(1) of the Energy Independence and Security Act of 2007 (42 U.S.C. 17191(1)) is amended in the matter preceding subparagraph (A) by striking “subjected to intervention, including intervention” and inserting “designed to access subsurface heat, including nonstimulation technologies”.

(b) PROGRAMS.—Section 615(b) of the Energy Independence and Security Act of 2007 (42 U.S.C. 17194(b)) is amended—

(1) in paragraph (1)—

(A) in subparagraph (C), by striking “mapping” and inserting “and fracture mapping, including real-time modeling”;

- (B) in subparagraph (E), by striking “and” at the end;
- (C) by redesignating subparagraph (F) as subparagraph (K); and (D) by inserting after subparagraph (E) the following:
 - “(F) well placement and orientation;
 - “(G) long-term reservoir management;
 - “(H) drilling technologies, methods, and tools;
 - “(I) improved exploration tools;
 - “(J) zonal isolation; and”;
- (2) by striking paragraph (2) and inserting the following:
 - “(2) FRONTIER OBSERVATORIES FOR RESEARCH IN GEOTHERMAL ENERGY.—
 - “(A) PROGRAM.—The Secretary shall support 2 field research sites operated by public or academic entities, which shall each be known as a ‘Frontier Observatory for Research in Geothermal Energy’ or ‘FORGE’ site, to develop, test, and enhance techniques and tools for enhanced geothermal energy.
 - “(B) SITE SELECTION.—Of the FORGE sites referred to in subparagraph (A)—
 - “(i) 1 shall be the existing research site in Milford, Utah; and
 - “(ii) 1 shall be—
 - “(I) selected by the Secretary through a competitive selection process; and
 - “(II) located in a different geologic type than the existing research site described in clause (i).
 - “(C) SITE OPERATION.—
 - “(i) INITIAL DURATION.—The FORGE site selected under subparagraph (B)(ii) shall operate for an initial term of not more than 7 years after the date on which site preparation is complete.
 - “(ii) PERFORMANCE METRICS.—The Secretary shall establish performance metrics for each FORGE site supported under this paragraph, which may be used by the Secretary to determine whether a FORGE site should continue to receive funding.
 - “(D) ADDITIONAL TERMS.—
 - “(i) IN GENERAL.—At the end of an operational term described in clause (ii), a FORGE site may—
 - “(I) be transferred to other public or private entities for further enhanced geothermal testing; or
 - “(II) subject to appropriations and a merit review by the Secretary, operate for an additional term of not more than 7 years.
 - “(ii) OPERATIONAL TERM DESCRIBED.—An operational term referred to in clause (i)—
 - “(I) in the case of the FORGE site designated under subparagraph (B)(i), is the existing operational term; and
 - “(II) in the case of the FORGE site selected under subparagraph (B)(ii), is the initial term under subparagraph (C) or an additional term under clause (i)(II).
 - “(3) ENHANCED GEOTHERMAL SYSTEMS DEMONSTRATIONS.—
 - “(A) IN GENERAL.—Beginning on the date of enactment of the AGILE Act of 2019, the Secretary, in collaboration with industry partners and institutions of higher education, shall support an initiative for demonstration of enhanced geothermal systems for power production or direct use.
 - “(B) PROJECTS.—
 - “(i) IN GENERAL.—Under the initiative described in subparagraph (A), not less than 4 demonstration projects shall be carried out in locations that are potentially commercially viable for enhanced geothermal systems development, as determined by the Secretary.
 - “(ii) REQUIREMENTS.—Demonstration projects under clause (i) shall—
 - “(I) collectively demonstrate—
 - “(aa) different geologic settings, such as hot sedimentary aquifers, layered geologic systems, supercritical systems, and basement rock systems; and
 - “(bb) a variety of development techniques, including open hole and cased hole completions, differing well orientations, and stimulation mechanisms;
 - “(II) to the extent practicable, use existing sites where subsurface characterization or geothermal energy integration analysis has been conducted; and
 - “(III) each be carried out in accordance with section 988 of the Energy Policy Act of 2005 (42 U.S.C. 16352).

“(iii) EASTERN DEMONSTRATION.—Not less than 1 demonstration project under clause (i) shall be located in an area east of the Mississippi River that is suitable for enhanced geothermal demonstration for power, heat, or a combination of power and heat.

“(C) OPTIONAL PROGRAM STRUCTURE.—

“(i) IN GENERAL.—The Secretary may, pursuant to section 646(g) of the Department of Energy Organization Act (42 U.S.C. 7256(g)), impose a cost share milestone-based payment structure (similar to the structure used in the National Aeronautics and Space Administration Commercial Orbital Transportation Services program) on a demonstration project described in subparagraph (B).

“(ii) REQUIREMENTS.—If the Secretary elects to carry out clause (i) for a demonstration project, the Secretary shall—

“(I) request proposals from eligible entities, as determined by the Secretary, that include—

“(aa) a business plan;

“(bb) technical details; and

“(cc) proposed milestones and associated payments; and ‘

“(II) select projects—

“(aa) based on the demonstrated ability of the eligible entity to meet the milestones and associated payments described in the proposal of that eligible entity; and

“(bb) that have the greatest potential commercial applicability.”.

SEC. 5. GEOTHERMAL HEAT PUMPS AND DIRECT USE.

Title VI of the Energy Independence and Security Act of 2007 is amended by inserting after section 616 (42 U.S.C. 17195) the following:

“SEC. 616A. GEOTHERMAL HEAT PUMPS AND DIRECT USE RESEARCH AND DEVELOPMENT.

“(a) PURPOSES.—The purposes of this section are—

“(1) to improve the components, processes, and systems used for geothermal heat pumps and the direct use of geothermal energy; and

“(2) to increase the energy efficiency, lower the cost, increase the use, and improve and demonstrate the applicability of geothermal heat pumps to, and the direct use of geothermal energy in, large buildings, commercial districts, residential communities, and large municipal, agricultural, or industrial projects.

“(b) DEFINITIONS.—In this section:

“(1) DIRECT USE OF GEOTHERMAL ENERGY.—The term ‘direct use of geothermal energy’ means systems that use water directly or through a heat exchanger to provide—

“(A) heating to buildings; or

“(B) heat required for industrial processes, agriculture, aquaculture, and other facilities.

“(2) ECONOMICALLY DISTRESSED AREA.—The term ‘economically distressed area’ means an area described in section 301(a) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3161(a)).

“(3) GEOTHERMAL HEAT PUMP.—The term ‘geothermal heat pump’ means a system that provides heating and cooling by exchanging heat from shallow ground or surface water using—

“(A) a closed loop system, which transfers heat by way of buried or immersed pipes that contain a mix of water and working fluid; or

“(B) an open loop system, which circulates ground or surface water directly into the building and returns the water to the same aquifer or surface water source.

“(c) PROGRAM.—

“(1) IN GENERAL.—The Secretary shall support within the Geothermal Technologies Office a program of research, development, and demonstration for geothermal heat pumps and the direct use of geothermal energy.

“(2) AREAS.—The program under paragraph (1) may include research, development, demonstration, and commercial application of—

“(A) geothermal ground loop efficiency improvements, cost reductions, and improved installation and operations methods;

“(B) the use of geothermal energy for building-scale energy storage;

“(C) the use of geothermal energy as a grid management resource or seasonal energy storage;

“(D) geothermal heat pump efficiency improvements;

“(E) the use of alternative fluids as a heat exchange medium, such as hot water found in mines and mine shafts, graywater, or other fluids that may improve the economics of geothermal heat pumps;

“(F) heating of districts, neighborhoods, communities, large commercial or public buildings, and industrial and manufacturing facilities;

“(G) the use of water sources at a temperature of less than 150 degrees Celsius for direct use; and

“(H) system integration of direct use with geothermal electricity production.

“(3) ENVIRONMENTAL IMPACTS.—In carrying out the program, the Secretary shall identify and mitigate potential environmental impacts in accordance with section 614(c).

“(d) GRANTS.—

“(1) IN GENERAL.—The Secretary shall make grants available to State, local, and Tribal governments, institutions of higher education, nonprofit entities, National Laboratories, utilities, and for-profit companies to promote the development of geothermal heat pumps and the direct use of geothermal energy.

“(2) PRIORITY.—In making grants under this subsection, the Secretary shall give priority to proposals that apply to large buildings, commercial districts, and residential communities that are located in economically distressed areas.”.

SEC. 6. MODIFYING THE DEFINITION OF RENEWABLE ENERGY TO INCLUDE THERMAL ENERGY.

(a) IN GENERAL.—Section 203 of the Energy Policy Act of 2005 (42 U.S.C. 15852) is amended—

(1) in subsection (b)(2), by striking “generated from” and inserting “produced from, or, in the case of thermal energy resulting from a thermal energy project placed in service after December 31, 2018, thermal energy generated from, or avoided by,”; and

(2) in subsection (c)—

(A) by redesignating paragraphs (1) through (3) as subparagraphs (A) through (C), respectively, and indenting appropriately;

(B) in the matter preceding subparagraph (A) (as so redesignated), by striking “For purposes” and inserting the following:

“(1) IN GENERAL.—For purposes”; and

(C) by adding at the end the following:

“(2) SEPARATE CALCULATION.—

“(A) IN GENERAL.—For purposes of determining compliance with the requirement of this section, any energy consumption that is avoided through the use of renewable energy shall be considered to be renewable energy produced.

“(B) DENIAL OF DOUBLE BENEFIT.—Avoided energy consumption that is considered to be renewable energy produced under subparagraph (A) shall not also be counted for purposes of achieving compliance with another Federal energy efficiency goal.”.

(b) CONFORMING AMENDMENT.—Section 2410q(a) of title 10, United States Code, is amended by striking “section 203(b)(2) of the Energy Policy Act of 2005 (42 U.S.C. 15852(b)(2))” and inserting “section 203(b) of the Energy Policy Act of 2005 (42 U.S.C. 15852(b))”.

SEC. 7. AUTHORIZATION OF APPROPRIATIONS.

Section 623 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17202) is amended by striking “\$90,000,000” in the first sentence and all that follows through the period at the end of the second sentence and inserting the following: “\$165,000,000 for each of fiscal years 2020 through 2024, of which—

“(1) \$5,000,000 for each of fiscal years 2020 through 2023 shall be for the prize competition under section 614(e); and

“(2) \$1,000,000 each fiscal year shall be for the drilling data repository under section 614(f).”.

SEC. 8. REAUTHORIZATION OF HIGH COST REGION GEOTHERMAL ENERGY GRANT PROGRAM.

Section 625 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17204) is amended—

(1) in subsection (a)(2), by inserting “or heat” after “electrical power”; and

(2) by striking subsection (e) and inserting the following:

“(e) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section \$5,000,000 for each of fiscal years 2020 through 2024.”.

SEC. 9. NATIONAL GOALS FOR PRODUCTION ON FEDERAL LAND.

(a) IN GENERAL.—Not later than September 1, 2021, the Secretary of the Interior shall, in consultation with the Secretary of Energy, the Secretary of Agriculture, and other heads of relevant Federal agencies, establish national goals for geothermal energy capacity on public land.

(b) GEOTHERMAL ENERGY DEVELOPMENT.—The Director of the Bureau of Land Management, in consultation with other appropriate Federal officials, shall take any actions that the Director of the Bureau of Land Management determines necessary to facilitate geothermal energy development, consistent with applicable laws.

SEC. 10. FACILITATION OF COPRODUCTION OF GEOTHERMAL ENERGY ON OIL AND GAS LEASES.

Section 4(b) of the Geothermal Steam Act of 1970 (30 U.S.C. 1003(b)) is amended by adding at the end the following:

“(4) LAND SUBJECT TO OIL AND GAS LEASE.—Land under an oil and gas lease issued pursuant to the Mineral Leasing Act (30 U.S.C. 181 et seq.) or the Mineral Leasing Act for Acquired Lands (30 U.S.C. 351 et seq.) that is subject to an approved application for permit to drill and from which oil and gas production is occurring may be available for noncompetitive leasing under this section to the holder of the oil and gas lease—

“(A) on a determination that—

“(i) geothermal energy will be produced from a well producing or capable of producing oil and gas; and

“(ii) national energy security will be improved by the issuance of such a lease; and

“(B) to provide for the coproduction of geothermal energy with oil and gas.”.

SEC. 11. GEOTHERMAL RESOURCE CONFIRMATION TEST PROJECTS.

(a) IN GENERAL.—The Geothermal Steam Act of 1970 (30 U.S.C. 1001 et seq.) is amended by adding at the end the following:

“SEC. 30. GEOTHERMAL RESOURCE CONFIRMATION TEST PROJECTS.

“(a) DEFINITIONS.—In this section:

“(1) EXTRAORDINARY CIRCUMSTANCES.—The term ‘extraordinary circumstances’ has the same meaning given the term in the Department of the Interior Departmental Manual, 516 DM 2.3A(3) and 516 DM 2, Appendix 2 (or successor provisions).

“(2) GEOTHERMAL RESOURCE CONFIRMATION TEST PROJECT.—The term ‘geothermal resource confirmation test project’ means a project of drilling not more than 3 wells into a reservoir to test or explore for geothermal resources—

“(A) on land for which the Secretary has issued a lease under this Act; and

“(B) that—

“(i) is carried out by the holder of the lease;

“(ii) allows for well testing, such as to confirm temperature, pressure, chemistry, flow rate, and near-wellbore and overall reservoir permeability;

“(iii) causes—

“(I) less than 2.5 acres of soil or vegetation disruption at the location of each geothermal exploration well; and

“(II) not more than an additional 5 acres of soil or vegetation disruption during access to or egress from the test site;

“(iv) is less than 9 inches in bottom-hole diameter;

“(v) is developed—

“(I) in a manner that does not require off-road motorized access other than to and from the well site along an identified off-road route; and

“(II) without the use of high-pressure well stimulation;

“(vi) includes the removal of any surface infrastructure other than the wellhead from the site not later than 90 days after the project is completed; and

“(vii) requires, not later than 42 months after the date on which the first exploration drilling began, the restoration of the project site to approximately the condition that existed at the time the project begins, unless the site is subsequently used as part of an energy development under the lease.

“(b) CATEGORICAL EXCLUSION.—Unless extraordinary circumstances exist, a project that the Secretary determines under subsection (c) is a geothermal resource confirmation test project shall be categorically excluded from the requirements for an environmental assessment or an environmental impact statement under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) or section 1508.4 of title 40, Code of Federal Regulations (or a successor regulation).

“(c) PROCESS.—

“(1) REQUIREMENT TO PROVIDE NOTICE.—A leaseholder shall provide notice to the Secretary of the intent of the leaseholder to carry out a geothermal resource confirmation test project at least 30 days before the start of drilling under the project.

“(2) REVIEW AND DETERMINATION.—Not later than 30 days after receipt of a notice of intent under paragraph (1), the Secretary shall, with respect to the project described in the notice of intent—

“(A) determine if the project is a geothermal resource confirmation test project;

“(B) notify the leaseholder of such determination; and

“(C) provide public notice of the determination.

“(3) OPPORTUNITY TO REMEDY.—If the Secretary determines under paragraph (2)(A) that the project is not a geothermal resource confirmation test project, the Secretary shall—

“(A) include in such notice clear and detailed findings on any deficiencies in the project that resulted in such determination; and

“(B) allow the leaseholder to remedy any such deficiencies and resubmit the notice of intent under paragraph (1).”.

(b) REPEAL.—The Geothermal Energy Research, Development, and Demonstration Act of 1974 (30 U.S.C. 1101 et seq.) is repealed.

SEC. 12. PROGRAM TO IMPROVE FEDERAL GEOTHERMAL PERMIT COORDINATION.

(a) DEFINITIONS.—In this section:

(1) PROGRAM.—The term “Program” means the Geothermal Energy Permitting Coordination Program established under subsection (b).

(2) SECRETARY.—The term “Secretary” means the Secretary of the Interior.

(b) ESTABLISHMENT OF PROGRAM.—Not later than 90 days after the date of enactment of this Act, the Secretary shall establish a program, to be known as the “Geothermal Energy Permitting Coordination Program”, to improve Federal permit coordination and reduce regulatory timelines with respect to geothermal energy projects on Federal land by increasing the expertise of officials administering and approving permits.

(c) ESTABLISHMENT OF PROGRAM OFFICES.—To carry out the Program, the Secretary shall establish 1 or more Program offices at State or district offices of the Department of the Interior.

(d) MEMORANDUM OF UNDERSTANDING.—

(1) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Secretary shall enter into a memorandum of understanding for purposes of this section with—

(A) the Secretary of Agriculture;

(B) the Administrator of the Environmental Protection Agency; and

(C) the Secretary of Defense.

(2) STATE PARTICIPATION.—The Secretary may request that the Governor of any State be a signatory to the memorandum of understanding under paragraph (1).

(e) DESIGNATION OF QUALIFIED STAFF.—

(1) IN GENERAL.—Not later than 30 days after the date on which the memorandum of understanding under subsection (d) is executed, all Federal signatories, as appropriate, shall assign to each Program office established under subsection (c) 1 or more employees who have expertise in the regulatory issues relating to the office or agency in which the employee is employed, including, as applicable, particular expertise in—

(A) consultation regarding, and preparation of, biological opinions under section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1536);

(B) permits under section 404 of the Federal Water Pollution Control Act (33 U.S.C. 1344);

(C) regulatory matters under the Clean Air Act (42 U.S.C. 7401 et seq.);

(D) the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.);

(E) planning under section 14 of the National Forest Management Act of 1976 (16 U.S.C. 472a);

(F) developing geothermal resources under the Geothermal Steam Act of 1970 (30 U.S.C. 1001 et seq.); and

(G) the preparation of analyses under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

(2) DUTIES.—Each employee assigned under paragraph (1) shall—

(A) not later than 90 days after the date on which the employee is assigned, report to the State Director of the Bureau of Land Management for the State in which the office to which the employee is assigned is located;

- (B) be responsible for all issues relating to the jurisdiction of the home office or agency of the employee; and
- (C) participate as part of the team of personnel working on proposed energy projects, planning, and environmental analyses.
- (f) ADDITIONAL PERSONNEL.—The Secretary shall assign to each Program office any additional personnel that are necessary to ensure the effective implementation of—
 - (1) the Program; and
 - (2) any program administered by the Program office, including inspection and enforcement relating to energy development on Federal land, in accordance with the multiple use mandate of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.).
- (g) TRANSFER OF FUNDS.—To facilitate the coordination and processing of geothermal permits on Federal land under the administration of a Program office, the Secretary may authorize the expenditure or transfer of any funds that are necessary to—
 - (1) the United States Fish and Wildlife Service;
 - (2) the Bureau of Indian Affairs;
 - (3) the Forest Service;
 - (4) the Environmental Protection Agency;
 - (5) the Corps of Engineers;
 - (6) the Department of Defense; or
 - (7) any State in which a geothermal project is located.
- (h) REPORTS.—Not later than 3 years after the date of enactment of this Act, the Secretary shall submit to Congress a report that describes—
 - (1) the progress of the Program; and
 - (2) any problems relating to leasing, permitting, or siting with respect to geothermal energy development on Federal land.
- (i) SAVINGS CLAUSE.—Nothing in this section affects—
 - (1) the operation of any Federal or State law; or
 - (2) any delegation of authority made by the head of a Federal agency any employee of which is participating in the Program.

PURPOSE

The purpose of S. 2657 is to support innovation in advanced geothermal research and development (R&D).

BACKGROUND AND NEED

Geothermal energy is zero emission energy that can provide both heat and power 24 hours a day, seven days a week. It can take the form of deep drilling to access hot rock or reservoirs, or it can take the form of heat pumps that utilize the temperature difference between the surface and subsurface for heating or cooling. Despite its high availability and versatility, geothermal has not received the same amount of attention as other renewable energy sources. The Department of Energy (DOE) has determined that geothermal could represent a large part of the U.S. energy mix by 2050, rivaling the growth of solar, wind, and hydraulic fracturing.

With new technology and regulatory changes, DOE estimates in a comprehensive 2019 report titled “GeoVision: Harnessing the Heat Beneath Our Feet” that commercial geothermal power could provide between 60 and 120 gigawatts (GW) of capacity by 2050 depending on oil and gas prices, representing at least a 26-fold increase from today. Over the same time period, DOE estimates the potential for up to 17,500 district-heating installations and more than 28 million households using geothermal heat pumps.

Despite this large potential in electricity and heating, geothermal energy currently constitutes 0.4 percent of the U.S. electricity mix and growth over the last several decades has been slow. Policy changes at DOE and the Department of the Interior could make the difference in realizing this potential.

Geothermal research and development opportunities

Miles below the Earth’s surface the energy is abundant enough to power all energy needs several times over, but accessing that heat in an affordable manner is a major challenge. Lowering the cost of geothermal energy in more locations is the most effective way to increase deployment. New tools, technologies, and methods for discovering and accessing geothermal resources need to be developed.

For example, nearly all geothermal electricity in the United States is currently produced from naturally occurring high temperature reservoirs located close to the surface (known as hydrothermal resources). These natural resources are primarily limited to the Western half of the United States, which has limited development. One major area of research at the DOE is developing techniques to create artificial methods to access heat where there is no reservoir present, known as enhanced or engineered geothermal systems (EGS).

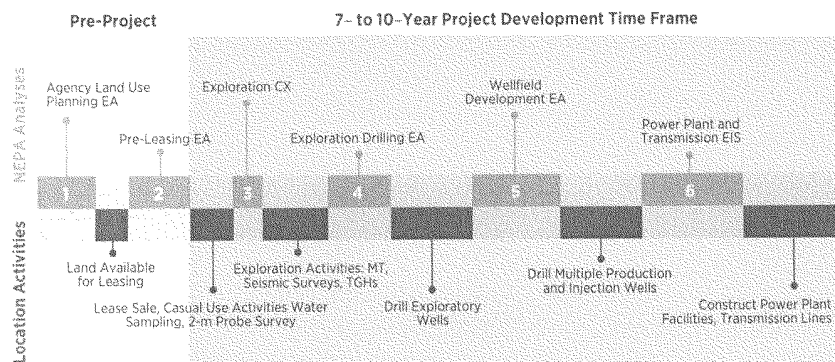
EGS has the potential to bring large-scale geothermal energy anywhere in the world depending on that location’s temperature-at-depth by creating fractures and permeability in naturally hot rock. The total resource potential for EGS in the United States is estimated to be over 5,000 GW-electric, or more than five times the total installed electric capacity as of 2016. Lowering the cost of drilling, resource stimulation, and long-term reservoir management are essential to realizing this potential. Some new technologies, including those developed as part of the shale energy boom in the 2010s, have potential applications for low cost EGS.

One underutilized application for geothermal energy in the United States is district heating and direct use. The best known example of large-scale geothermal district heating projects in the United States is the city of Boise, Idaho, which has been operating since the late 1800s. There are a total of 21 district heating systems in the United States. The heat from geothermal resources can also be used directly for agricultural or industrial applications. One example of this is at the Chena Hot Springs resort in Alaska, where a very low temperature geothermal resource is used to heat a series of greenhouses. Lowering the cost of geothermal drilling and EGS will greatly expand the potential to use low and medium temperature heat for direct use and district heating applications.

A final critical area of R&D for geothermal energy is in other potential revenue streams beyond direct energy production. One area of growing interest is the potential to coproduce critical minerals, especially lithium, from the brines associated with geothermal energy production. The Salton Sea in California in particular could have enough lithium to produce up to 17,000 metric tons of lithium carbonate annually. Geothermal reservoirs and resources also have the potential to double as energy storage systems. Directly storing heat in rocks underground is one of the cheapest forms of energy storage. As interest grows in “seasonal energy storage,” or the ability to storage energy for days and weeks rather than minutes and hours, bulk energy storage systems need to become increasingly cheaper. Research into geothermal energy could unlock new mechanisms for seasonal energy storage to balance a potential future grid with high levels of variable renewable electricity generation.

Geothermal regulatory reform opportunities

Given that 90 percent of identified geothermal resources are on Federal lands, the Federal permitting process for geothermal has a large impact on the rate and scope of geothermal energy development. The National Renewable Energy Laboratory (NREL) estimates that average permitting and environmental review timelines range from seven up to 10 years for geothermal development on Bureau of Land Management (BLM) land. The current permitting and associated environmental review process requires additional efficiencies for geothermal energy to be competitive on public lands.



Geothermal projects on Federal land may be subject to review under the National Environmental Policy Act of 1969 (NEPA, Public Law 91-190) up to six times during development, from land-use planning through final power plant construction. Each review is typically conducted separately, resulting in a prolonged development timeline. These environmental reviews are important to ensure environmental quality, but result in delays.

Some geothermal exploration can occur under an existing categorical exclusion (CX) under NEPA (BLM 2016, Department of the Interior 516 DM 11.9(B)(6)), as long as such exploration does not cause additional surface disturbance or touch the geothermal resource. As a crucial part of resource exploration is testing the resource for temperature, flow-rate and chemistry, this existing exploration CX has limited utility. Actually confirming the resource's viability requires an additional environmental assessment under NEPA and ultimately elongates the exploration process to up to seven years.

Oil and gas exploration on Federal lands, which is similar to geothermal exploration in many respects, does not have this same limitation due to CXs enacted in section 390 of the Energy Policy Act of 2005 (EPA 2005, Public Law 109-58; 42 U.S.C. 15942) that did not extend to geothermal. An addition to the existing CX that allows access to the resource would both improve development timelines and reduce the total amount of exploration required for successful development.

One other major issue is the lack of experienced regulatory personnel and interagency coordination for geothermal energy development. This has previously caused a backlog in the U.S. Forest Service's geothermal lease nominations, which could happen again on Federal land if geothermal development begins to pick up.

NREL estimates that improved coordinated permitting between agencies and with States, combined with access to relevant geothermal permitting expertise, could decrease the average permitting time for development of Federal lands by two years. NREL estimates that coordinated permitting processes, combined with an improved environmental review process, could double geothermal development through 2050 compared to current development rates, even without any new technology improvement. These regulatory reforms coupled with technology improvement such as EGS would be sufficient to result in the 26-fold growth in geothermal capacity.

S. 2657, the Advanced Geothermal Innovation Leadership (AGILE) Act follows many of the recommendations of the GeoVision report as well as industry and academic experts, that are expected to stimulate the geothermal industry. These include updated resource assessments, expanded R&D programs for conventional, low temperature, and enhanced geothermal, as well as regulatory reform and permit coordination for development on Federal lands to allow parity with oil and gas development.

LEGISLATIVE HISTORY

S. 2657 was introduced by Senators Murkowski and Manchin on October 22, 2019. The Subcommittee on Energy held a hearing on the measure on November 6, 2019.

The Senate Committee on Energy and Natural Resources met in open business session on November 19, 2019, and ordered S. 2657 favorably reported, as amended.

COMMITTEE RECOMMENDATION

The Senate Committee on Energy and Natural Resources, in open business session on November 19 2019, by a majority voice of a quorum present, recommends that the Senate pass S. 2657, if amended as described herein. Senator Lee asked to be recorded as voting no.

COMMITTEE AMENDMENT

During its consideration of S. 2657, the Committee adopted a joint staff amendment in the nature of a substitute. The substitute amendment modifies section 2 of the bill by amending section 2501 of the Energy Policy Act of 1992 (EPAAct '92, Public Law 102-486; 30 U.S.C. 1028) to direct the Secretary of the Interior to coordinate with relevant State officials and institutions of high education in developing geothermal assessments in Alaska, Hawaii, and Puerto Rico.

The substitute amendment further removes the broader secondary use program in section 3 except for the prize competition and moves the appropriations authorization for the prize to section 7. It also adds a new subsection (f) to section 614 of the Energy Independence and Security Act of 2007 (EISA, Public Law 110-140; 42 U.S.C. 17193) to direct the Secretary of Energy (Secretary) to coordinate with the Secretary of the Interior to establish a repository of geothermal drilling information to lower the cost of geothermal drilling.

The substitute amendment makes technical changes and clarifications to the Frontier Observatories for Research in Geothermal

Energy (FORGE) provisions and to the demonstrations programs and moves those provisions from section 5 to section 4. It also amends section 5 to add a new section 616A to EISA to authorize a geothermal heat pump and direct use R&D program at DOE.

The substitute amendment amends section 6 (which was previously section 4) to remove the eligibility of qualified waste heat as a renewable resource. The substitute amendment also increases the appropriations authorization in section 7 (which was previously section 6) for the Geothermal Technologies Office from \$90 million per year to \$150 million per year. It further clarifies that within that amount, \$5 million per year for four years is dedicated to the prize competition authorized in section 3 and \$1 million per year is authorized for the data repository in section 3.

The substitute amendment adds a new section 9 to require the Secretary of the Interior to establish national goals for geothermal energy capacity. It also directs the BLM Director to take any actions necessary to facilitate geothermal energy development.

The substitute amendment adds a new section 10 to create a CX under NEPA for certain types of geothermal energy resource confirmation test projects and provides the process pertaining to such projects. The substitute amendment also renumbers section 8 as section 12.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title

Section 1 provides a short title to the bill.

Section 2. Update to geothermal resource assessment

Section 2 amends section 2501 of EAct '92 to direct the United States Geological Survey (USGS) to update an assessment of geothermal energy potential in the United States in consultation with the Secretary. Within areas previously identified as having significant potential for hydrothermal energy or EGS the resource assessment update is to focus on improving resource potential resolution; quantifying the total potential to coproduce energy and minerals; incorporating data on areas that could be suitable for thermal energy storage; and producing high resolution maps. The section also directs USGS to expand geothermal assessments to include Alaska, Hawaii, and Puerto Rico to the greatest extent practicable.

Section 3. General geothermal resource and development programs

Section 3 amends the general geothermal R&D in Section 614 of EISA to add new subsections (d), (e), (f).

The new section 614(d) authorizes an oil and gas technology transfer initiative between DOE's Office of Fossil Energy and the Office of Energy Efficiency and Renewable Energy to modify, improve, and demonstrate oil and gas technology in geothermal energy. The Secretary is directed to prioritize technologies with the greatest potential to lower the cost of geothermal energy.

The new section 614(e) creates a prize competition for demonstration of the coproduction of geothermal energy and critical minerals. Each prize is capped at \$10 million.

The new section 614(f) directs the Secretary to coordinate with the Secretary of the Interior to establish a repository of geothermal

drilling information to lower the cost of geothermal drilling. The repository shall be coordinated with international partners and shall be integrated with the National Geothermal Data System.

Section 4. Enhanced geothermal research and development

Section 4(a) amends the definition of “Engineered” in section 612(1) of EISA.

Subsection (b) amends the enhanced geothermal R&D in section 615(b) of EISA to add several new research areas for enhanced geothermal. It further authorizes up to two FORGE sites, and provides rules for the operation and reauthorization of those sites, including the current FORGE site in Milford, Utah.

The subsection also authorizes four enhanced geothermal systems demonstrations, which must be conducted using a variety of geologic settings, development techniques, and existing sites where geothermal analysis has been conducted. One demonstration project must be located east of the Mississippi River. The Secretary is also authorized to operate the demonstration program using an optional milestone and performance based structure.

Section 5. Geothermal heat pumps and direct use

Section 5 amends EISA to add a new section 616A which authorizes a geothermal heat pump and direct use R&D program within DOE’s Geothermal Technologies Office.

The new section 616A(a) provides the program’s purposes and the new subsection (b) defines key terms.

The new subsection (c) directs the Secretary to establish the program and provides the program areas, including the use of geothermal energy for building-scale energy storage and geothermal heat pump efficiency improvements. It also directs the Secretary to identify and mitigate potential environmental impacts.

The new subsection (d) directs the Secretary to make grants to support the program and to give priority to economically distressed areas.

Section 6. Modifying the definition of renewable energy to include thermal energy

Section 6 amends the definition of renewable energy in the Federal purchase requirement in section 203 of EPAct ’05 to include thermal energy generated from or avoided by renewable energy, including geothermal energy. It also requires that avoided energy through the use of renewable sources counts as renewable energy that is produced, and cannot be double counted for the purposes of meeting a Federal energy efficiency goal.

Section 7. Authorization of appropriations

Section 7 amends section 623 of EISA to increase the authorization for geothermal energy R&D to \$165 million annually for fiscal years (FYs) 2020 through 2024. Of that total, \$5 million for each of FYs 2020 through 2023 is allocated for the prize competition in section 614(e) and \$1 million is authorized annually for the repository in section 614(f).

Section 8. Reauthorization of High Cost Region Geothermal Energy Grant program

Section 8 amends the High Cost Region Geothermal Energy Grant program in section 625 of EISA to include eligibility based on high cost heat and by reauthorizing the appropriations authorization at \$5 million annually for FYs 2020 through 2024.

Section 9: National goals for production and priority areas for development on Federal land

Section 9(a) directs the Secretary of the Interior, in consultation with the Secretaries of Energy and Agriculture, to establish national goals for geothermal energy capacity on public land.

Subsection (b) directs the BLM Director to take any action deemed necessary to facilitate geothermal energy development.

Section 10: Facilitation of coproduction of geothermal energy on oil and gas leases

Section 10 amends section 4(b) of the Geothermal Steam Act of 1970 (Public Law 91–581; 30 U.S.C. 1003(b)) to add a new paragraph 4 allowing noncompetitive leasing for geothermal energy on Federal lands to an existing oil and gas lease holder if that geothermal energy will be coproduced from an existing oil or gas well and national energy security will be improved by the issuance of such a lease.

Section 11: Geothermal Resource Confirmation Test Projects

Section 11(a) amends the Geothermal Steam Act of 1970 to add a new section 30 titled “Geothermal Resource Confirmation Test Projects.”

The new section 30(a) defines key terms, including for “extraordinary circumstances” and “Geothermal Resource Confirmation Test Project” or “GRCTP.”

The new subsection (b) states that a GRCTP is categorically excluded from NEPA unless extraordinary circumstances exist.

The new subsection (c) sets forth the process for carrying out a GRCTP. The relevant leaseholder is required to provide notice of intent (NOI) to the Secretary of the Interior 30 days before the start of a proposed GRCTP. The Secretary of the Interior is then required to examine the NOI and notify the leaseholder and the public of whether the proposed activity qualifies as a GRCTP within 30 days of receipt of the NOI.

Section 11(b) repeals the Geothermal Energy Research, Development, and Demonstration Act of 1974 (Public Law 93–410; 30 U.S.C. 1101 *et seq.*).

Section 12. Program to improve Federal geothermal permit coordination

Section 12(a) defines key terms used in the section.

Subsection (b) directs the Secretary of the Interior to establish a program to improve coordination and reduce regulatory timelines with respect to geothermal energy projects on Federal land.

Subsection (c) directs the Secretary of the Interior to establish one or more program offices to carry out the program.

Subsection (d) directs the Secretary of the Interior to enter into a memorandum of understanding with the Secretary of Agriculture,

the Environmental Protection Agency Administrator, and the Secretary of Defense.

Subsection (e) directs each signatory agency to designate qualified staff to relevant program offices who have expertise in laws pertaining to geothermal energy development on Federal lands.

Subsection (f) directs the Secretary of the Interior to assign additional personnel as necessary to ensure effective implementation.

Subsection (g) authorizes the Secretary of the Interior to transfer funds to other agencies to facilitate the coordination and processing of geothermal permits on Federal lands.

Subsection (h) directs the Secretary of the Interior to report to Congress on the program's progress within three years of enactment.

Subsection (i) contains a savings clause stipulating that nothing in section 12 affects the operation of any State or Federal law or any delegation of authorities from a head of a Federal agency.

COST AND BUDGETARY CONSIDERATIONS

The Congressional Budget Office estimate of the costs of this measure has been requested but was not received at the time the report was filed. When the Congressional Budget Office completes its cost estimate, it will be posted on the internet at www.cbo.gov.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out S. 2657. The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals and businesses.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would result from the enactment of S. 2657, as ordered reported.

CONGRESSIONALLY DIRECTED SPENDING

S. 2657, as ordered reported, does not contain any congressionally directed spending items, limited tax benefits, or limited tariff benefits as defined in rule XLIV of the Standing Rules of the Senate.

EXECUTIVE COMMUNICATIONS

The testimony provided by the Department of Energy at the November 6, 2019, hearing on S. 2657 follows:

TESTIMONY OF ASSISTANT SECRETARY DANIEL SIMMONS,
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE EN-
ERGY, U.S. DEPARTMENT OF ENERGY

INTRODUCTION

Chairman Cassidy, Ranking Member Heinrich, and Members of the Energy Subcommittee of the Committee on Energy and Natural Resources, thank you for the oppor-

tunity to testify today on legislation pertinent to the Department of Energy now pending in the Senate. My name is Daniel Simmons, and I am the Assistant Secretary for the Office of Energy Efficiency and Renewable Energy (EERE).

As the Assistant Secretary, I am responsible for overseeing a broad portfolio of energy efficiency and renewable energy programs. The technologies in my portfolio advance America's economic growth and energy security while enhancing the reliability and resilience of the U.S. energy system. The Department of Energy supports improving the energy efficiency and reducing energy costs, while at the same time ensuring important performance standards are met or exceeded. For instance, we want to ensure schools and other buildings are sufficiently bright to ensure safety, and that water flow from faucets is strong enough to clean dirty hands. Today, I would like to share what relevant work my office has done and is doing in the areas that these bills address.

I have been asked to testify on eleven (11) bills today, addressing a range of important energy issues. The Administration continues to review all of these bills. I appreciate the ongoing bipartisan efforts to address our Nation's energy challenges and I look forward to working with the Committee.

BILLS

S. 2657—Advanced Geothermal Innovation Leadership (AGILE) Act of 2019

S. 2657, the AGILE Act of 2019 aims to accelerate geothermal energy development in the United States by addressing technical and non-technical barriers to geothermal development in both electric and direct use sectors. The bill achieves this through promoting research and development, encouraging technology transfer between the geothermal and oil and gas industries, and exploring ways to improve federal permit coordination.

Work currently underway in the Geothermal Technologies Office to address challenges to geothermal deployment includes: collaboration with the Vehicle Technology Office and Advanced Manufacturing Office to evaluate ways to improve the critical materials supply chain; technology testing opportunities with Wells of Opportunity that will allow stakeholders from geothermal, oil and gas, mining and other relevant subsurface industries to more rapidly adapt technologies to the Enhanced Geothermal Systems and conventional geothermal environments; innovative portfolios focusing on drilling, machine learning, and zonal isolation technologies; and continued investment at the Utah Frontier Observatory for Research in Geothermal Energy site.

In addition, the *GeoVision* analysis, published in May 2019, which found that optimizing permitting timelines could reduce costs and facilitate geothermal project devel-

opment, potentially doubling installed geothermal capacity by 2050.

EERE has provided technical comments on this bill. The Department will continue to review the legislation and looks forward to working with Congress as the legislative process moves forward.

CONCLUSION

Thank you again for the opportunity to testify before the Subcommittee today. The Department appreciates the ongoing bipartisan efforts to address our Nation's energy challenges, and looks forward to working with the Committee on the legislation on today's agenda and any future legislation. I would be happy to answer your questions.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the changes in existing law made by S. 2657, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

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ENERGY POLICY ACT OF 1992

Public Law 102-486, as Amended

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TITLE XXV—COAL, OIL, AND GAS

SEC. 2501. HOT DRY ROCK GEOTHERMAL ENERGY.

(a) *DEFINITION OF ENHANCED GEOTHERMAL SYSTEMS.*—*In this section, the term “enhanced geothermal systems” has the meaning given the term in section 612 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17191).*

[(a)] (b) The Secretary of the Interior, acting through the United States Geological Survey, and in consultation with the Secretary of Energy, shall establish a cooperative Government-private sector program with respect to hot dry rock geothermal energy resources on public lands (as such term is defined in section 1702(e) of title 43) and lands managed by the Department of Agriculture, other than any such public or other lands that are withdrawn from geothermal leasing. Such program shall include, but shall not be limited to, activities to identify, select, and classify those areas throughout the United States that have a high potential for hot dry

rock geothermal energy production and activities to develop and disseminate information regarding the utilization of such areas for hot dry rock energy production. Such information may include information regarding field test processes and techniques for assuring that hot dry rock geothermal energy development projects are developed in an economically feasible manner without adverse environmental consequences. Utilizing the information developed by the Secretary, together with information developed in connection with other related programs carried out by other Federal agencies, the Secretary, acting through the United States Geological Survey, may also enter into contracts and cooperative agreements with any public or private entity to provide assistance to any such entity to enable such entity to carry out additional projects with respect to the utilization of hot dry rock geothermal energy resources which will further the purposes of this section.

(c) *UPDATE TO GEOTHERMAL RESOURCE ASSESSMENT.*—*The Secretary of the Interior, acting through the United States Geological Survey, and in consultation with the Secretary of Energy, shall update the United States geothermal resource assessment carried out by the United States Geological Survey, including—*

(1) *with respect to areas previously identified by the Department of Energy or the United States Geological Survey as having significant potential for hydrothermal energy or enhanced geothermal systems energy, by focusing on—*

(A) *improving the resolution of resource potential at systematic temperatures and depths, including temperatures and depths appropriate for power generation and direct use applications;*

(B) *quantifying the total potential to coproduce geothermal energy and minerals;*

(C) *incorporating data relevant to underground thermal energy storage and exchange, such as aquifer and soil properties; and (D) producing high resolution maps, including—*

(i) *maps that indicate key subsurface parameters for electric and direct use resources; and*

(ii) *risk maps for induced seismicity based on geologic, geographic, and operational parameters; and*

(2) *to the maximum extent practicable, by coordinating with relevant State officials and institutions of higher education to expand geothermal assessments, including enhanced geothermal systems assessments, to include assessments for the Commonwealth of Puerto Rico and the States of Alaska and Hawaii.*

[(b)] (d) There are authorized to be appropriated such sums as may be [necessary] necessary to carry out this section.

* * * * *

ENERGY INDEPENDENCE AND SECURITY ACT OF 2007

Public Law 110–140, as Amended

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TITLE VI—ACCELERATED RESEARCH AND DEVELOPMENT

* * * * *

Subtitle B—Geothermal Energy

* * * * *

SEC. 612. DEFINITIONS.

For purposes of this subtitle:

- (1) **ENGINEERED.**—When referring to enhanced geothermal systems, the term “engineered” means [subjected to intervention, including intervention] *designed to access subsurface heat, including nonstimulation technologies*, to address one of more of the following issues:

* * * * *

SEC. 614. GENERAL GEOTHERMAL SYSTEMS RESEARCH AND DEVELOPMENT

- (c) **ENVIRONMENTAL IMPACTS.**—The Secretary shall—

(1) support a program of research, development, demonstration, and commercial application of technologies and practices designed to mitigate or preclude potential adverse environmental impacts of geothermal energy development, production or use, and seek to ensure that geothermal energy development is consistent with the highest practicable standards of environmental stewardship;

(2) in conjunction with the Assistant Administrator for Research and Development at the Environmental Protection Agency, support a research program to identify potential environmental impacts of geothermal energy development, production, and use, and ensure that the program described in paragraph (1) addresses such impacts, including effects on groundwater and local hydrology; and

(3) support a program of research to compare the potential environmental impacts identified as part of the development, production, and use of geothermal energy with the potential emission reductions of greenhouse gases gained by geothermal energy development, production, and use.

- (d) **OIL AND GAS TECHNOLOGY TRANSFER INITIATIVE.**—

(1) **IN GENERAL.**—*The Secretary shall support an initiative among the Office of Fossil Energy, the Office of Energy Efficiency and Renewable Energy, and the private sector to modify, improve, and demonstrate the use in geothermal energy development of relevant advanced technologies and operation techniques used in the oil and gas sector.*

(2) **PRIORITIES.**—*In carrying out paragraph (1), the Secretary shall prioritize technologies with the greatest potential to significantly increase the use and lower the cost of geothermal energy in the United States, including the cost and speed of small- and large-scale geothermal drilling.*

- (e) **COPRODUCTION OF GEOTHERMAL ENERGY AND MINERALS PRODUCTION PRIZE COMPETITION.**—

(1) *IN GENERAL.*—The Secretary shall carry out a prize competition under which the Secretary shall award prizes to demonstrate the coproduction of critical minerals (as defined by the Secretary of the Interior on the date of enactment of the AGILE Act of 2019) from geothermal resources.

(2) *REQUIREMENTS.*—A demonstration awarded a prize under paragraph (1) shall—

(A) improve the cost-effectiveness of removing minerals from geothermal brines as part of the coproduction process;

(B) increase recovery rates of the targeted mineral commodity;

(C) decrease water use and other environmental impacts, as determined by the Secretary; and

(D) demonstrate a path to commercial viability.

(3) *MAXIMUM PRIZE AMOUNT.*—The maximum amount of a prize awarded under paragraph (1) shall be \$10,000,000.

(f) *DRILLING DATA REPOSITORY.*—

(1) *IN GENERAL.*—The Secretary shall, in coordination with the Secretary of the Interior, establish and operate a voluntary, industry-wide repository of geothermal drilling information to lower the cost of future geothermal drilling.

(2) *REPOSITORY.*—

(A) *IN GENERAL.*—In carrying out paragraph (1), the Secretary shall collaborate with geothermally significant countries, such as Iceland, Switzerland, Kenya, Australia, the Philippines, and any other relevant country, as determined by the Secretary.

(B) *DATA SYSTEM.*—The repository established under paragraph (1) shall be integrated with the National Geothermal Data System.

* * * * *

SEC. 615. ENHANCED GEOTHERMAL SYSTEMS RESEARCH AND DEVELOPMENT.

(a) *IN GENERAL.*—The Secretary shall support a program of research, development, demonstration, and commercial application for enhanced geothermal systems, including the programs described in subsection (b).

(b) *PROGRAMS.*—

(1) *ENHANCED GEOTHERMAL SYSTEMS TECHNOLOGIES.*—The Secretary shall support a program of research, development, demonstration, and commercial application of the technologies and knowledge necessary for enhanced geothermal systems to advance to a state of commercial readiness, including advances in—

(A) reservoir stimulation;

(B) reservoir characterization, monitoring, and modeling;

(C) stress [mapping] and fracture mapping, including real-time modeling;

(D) tracer development;

(E) three-dimensional tomography; [and]

(F) well placement and orientation;

(G) long-term reservoir management;

(H) drilling technologies, methods, and tools;

(I) improved exploration tools;

(J) zonal isolation; and

[(F)] (K) understanding seismic effects of reservoir engineering and stimulation.

[(2) Enhanced geothermal systems reservoir stimulation

[(A) PROGRAM.—In collaboration with industry partners, the Secretary shall support a program of research, development, and demonstration of enhanced geothermal systems reservoir stimulation technologies and techniques. A minimum of 4 sites shall be selected in locations that show particular promise for enhanced geothermal systems development. Each site shall—

[(i) represent a different class of subsurface geologic environments; and

[(ii) take advantage of an existing site where subsurface characterization has been conducted or existing drill holes can be utilized, if possible.

[(B) CONSIDERATION OF EXISTING SITE.—The Desert Peak, Nevada, site, where a Department of Energy and industry cooperative enhanced geothermal systems project is already underway, may be considered for inclusion among the sites selected under subparagraph (A).]

(2) FRONTIER OBSERVATORIES FOR RESEARCH IN GEOTHERMAL ENERGY.—

(A) PROGRAM.—*The Secretary shall support 2 field research sites operated by public or academic entities, which shall each be known as a “Frontier Observatory for Research in Geothermal Energy” or “FORGE” site, to develop, test, and enhance techniques and tools for enhanced geothermal energy.*

(B) SITE SELECTION.—*Of the FORGE sites referred to in subparagraph (A)—*

(i) 1 shall be the existing research site in Milford, Utah; and

(ii) 1 shall be—

(I) selected by the Secretary through a competitive selection process; and

(II) located in a different geologic type than the existing research site described in clause (i).

(C) SITE OPERATION.—

(i) INITIAL DURATION.—The FORGE site selected under subparagraph (B)(ii) shall operate for an initial term of not more than 7 years after the date on which site preparation is complete.

(ii) PERFORMANCE METRICS.—The Secretary shall establish performance metrics for each FORGE site supported under this paragraph, which may be used by the Secretary to determine whether a FORGE site should continue to receive funding.

(D) ADDITIONAL TERMS.—

(i) IN GENERAL.—At the end of an operational term described in clause (ii), a FORGE site may—

(I) be transferred to other public or private entities for further enhanced geothermal testing; or

(II) subject to appropriations and a merit review by the Secretary, operate for an additional term of not more than 7 years.

(ii) *OPERATIONAL TERM DESCRIBED.*—An operational term referred to in clause (i)—

(I) in the case of the *FORGE* site designated under subparagraph (B)(i), is the existing operational term; and

(II) in the case of the *FORGE* site selected under subparagraph (B)(ii), is the initial term under subparagraph (C) or an additional term under clause (i)(II).

(3) *ENHANCED GEOTHERMAL SYSTEMS DEMONSTRATIONS.*—

(A) *IN GENERAL.*—Beginning on the date of enactment of the *AGILE* Act of 2019, the Secretary, in collaboration with industry partners and institutions of higher education, shall support an initiative for demonstration of enhanced geothermal systems for power production or direct use.

(B) *PROJECTS.*—

(i) *IN GENERAL.*—Under the initiative described in subparagraph (A), not less than 4 demonstration projects shall be carried out in locations that are potentially commercially viable for enhanced geothermal systems development, as determined by the Secretary.

(ii) *REQUIREMENTS.*—Demonstration projects under clause (i) shall—

(I) collectively demonstrate—

(aa) different geologic settings, such as hot sedimentary aquifers, layered geologic systems, supercritical systems, and basement rock systems; and

(bb) a variety of development techniques, including open hole and cased hole completions, differing well orientations, and stimulation mechanisms;

(II) to the extent practicable, use existing sites where subsurface characterization or geothermal energy integration analysis has been conducted; and

(III) each be carried out in accordance with section 988 of the *Energy Policy Act of 2005* (42 U.S.C. 16352).

(iii) *EASTERN DEMONSTRATION.*—Not less than 1 demonstration project under clause (i) shall be located in an area east of the *Mississippi River* that is suitable for enhanced geothermal demonstration for power, heat, or a combination of power and heat.

(C) *OPTIONAL PROGRAM STRUCTURE.*—

(i) *IN GENERAL.*—The Secretary may, pursuant to section 646(g) of the *Department of Energy Organization Act* (42 U.S.C. 7256(g)), impose a cost share milestone-based payment structure (similar to the structure used in the *National Aeronautics and Space Administration Commercial Orbital Transportation Services* program) on a demonstration project described in subparagraph (B).

(ii) *REQUIREMENTS.*—If the Secretary elects to carry out clause (i) for a demonstration project, the Secretary shall—

(I) request proposals from eligible entities, as determined by the Secretary, that include—

(aa) a business plan;

(bb) technical details; and

(cc) proposed milestones and associated payments; and

(II) select projects—

(aa) based on the demonstrated ability of the eligible entity to meet the milestones and associated payments described in the proposal of that eligible entity; and

(bb) that have the greatest potential commercial applicability.

SEC. 616. GEOTHERMAL ENERGY PRODUCTION FROM OIL AND GAS FIELDS AND RECOVERY AND PRODUCTION OF GEOPRESSURED GAS RESOURCES.

* * * * *

(e) *COMPETITIVE GRANT SELECTION.*—Not less than 90 days after the date of the enactment of this Act, the Secretary shall conduct a national solicitation for applications for grants under the programs outlines in subsections (b) and (d). Grant recipients shall be selected on a competitive basis based on criteria in the respective subsection.

(f) *WELL DRILLING.*—No funds may be used under this section for the purpose of drilling new wells.

SEC. 616A. GEOTHERMAL HEAT PUMPS AND DIRECT USE RESEARCH AND DEVELOPMENT.

(a) *PURPOSES.*—The purposes of this section are—

(1) to improve the components, processes, and systems used for geothermal heat pumps and the direct use of geothermal energy; and

(2) to increase the energy efficiency, lower the cost, increase the use, and improve and demonstrate the applicability of geothermal heat pumps to, and the direct use of geothermal energy in, large buildings, commercial districts, residential communities, and large municipal, agricultural, or industrial projects.

(b) *DEFINITIONS.*—In this section:

(1) *DIRECT USE OF GEOTHERMAL ENERGY.*—The term ‘direct use of geothermal energy’ means systems that use water directly or through a heat exchanger to provide—

(A) heating to buildings; or

(B) heat required for industrial processes, agriculture, aquaculture, and other facilities.

(2) *ECONOMICALLY DISTRESSED AREA.*—The term ‘economically distressed area’ means an area described in section 301(a) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3161(a)).

(3) *GEOTHERMAL HEAT PUMP.*—The term ‘geothermal heat pump’ means a system that provides heating and cooling by exchanging heat from shallow ground or surface water using—

(A) a closed loop system, which transfers heat by way of buried or immersed pipes that contain a mix of water and working fluid; or

(B) an open loop system, which circulates ground or surface water directly into the building and returns the water to the same aquifer or surface water source.

(c) *PROGRAM.*—

(1) *IN GENERAL.*—The Secretary shall support within the Geothermal Technologies Office a program of research, development, and demonstration for geothermal heat pumps and the direct use of geothermal energy.

(2) *AREAS.*—The program under paragraph (1) may include research, development, demonstration, and commercial application of—

(A) geothermal ground loop efficiency improvements, cost reductions, and improved installation and operations methods;

(B) the use of geothermal energy for building-scale energy storage;

(C) the use of geothermal energy as a grid management resource or seasonal energy storage;

(D) geothermal heat pump efficiency improvements;

(E) the use of alternative fluids as a heat exchange medium, such as hot water found in mines and mine shafts, graywater, or other fluids that may improve the economics of geothermal heat pumps;

(F) heating of districts, neighborhoods, communities, large commercial or public buildings, and industrial and manufacturing facilities;

(G) the use of water sources at a temperature of less than 150 degrees Celsius for direct use; and

(H) system integration of direct use with geothermal electricity production.

(3) *ENVIRONMENTAL IMPACTS.*—In carrying out the program, the Secretary shall identify and mitigate potential environmental impacts in accordance with section 614(c).

(d) *GRANTS.*—

(1) *IN GENERAL.*—The Secretary shall make grants available to State, local, and Tribal governments, institutions of higher education, nonprofit entities, National Laboratories, utilities, and for-profit companies to promote the development of geothermal heat pumps and the direct use of geothermal energy.

(2) *PRIORITY.*—In making grants under this subsection, the Secretary shall give priority to proposals that apply to large buildings, commercial districts, and residential communities that are located in economically distressed areas.

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SEC. 623. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary to carry out this subtitle **[\$90,000,000** for each of the fiscal years 2008 through 2012, of which **\$10,000,000** for each fiscal year shall be for carrying out section 616. There are also authorized to be appropriated to the Secretary for the Intermountain West Geothermal Consortium **\$5,000,000** for each of the fiscal years 2008 through

2012.】 \$165,000,000 for each of fiscal years 2020 through 2024, of which—

- (1) \$5,000,000 for each of fiscal years 2020 through 2023 shall be for the prize competition under section 614(e); and
- (2) \$1,000,000 each fiscal year shall be for the drilling data repository under section 614(f).

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SEC. 625. HIGH COST REGION GEOTHERMAL ENERGY GRANT PROGRAM.

(a) **DEFINITIONS.**—In this section:

(1) **ELIGIBLE ENTITY.**—The term “eligible entity” means—

- (A) a utility;
- (B) an electric cooperative;
- (C) a State;
- (D) a political subdivision of a State;
- (E) an Indian tribe; or
- (F) a Native Corporation.

(2) **HIGH-COST REGION.**—The term “high-cost region” means a region in which the average cost of electrical power or *heat* exceeds 150 percent of the national average retail cost, as determined by the Secretary.

(b) **PROGRAM.**—The Secretary shall use amounts made available to carry out this section to make grants to eligible entities for activities described in subsection (c).

(c) **ELIGIBLE ACTIVITIES.**—An eligible entity may use grant funds under this section, with respect to a geothermal energy project in a high-cost region, only—

- (1) to conduct a feasibility study, including a study of exploration, geochemical testing, geomagnetic surveys, geologic information gathering, baseline environmental studies, well drilling, resource characterization, permitting, and economic analysis;
- (2) for design and engineering costs, relating to the project; and
- (3) to demonstrate and promote commercial application of technologies related to geothermal energy as part of the project.

(d) **COST SHARING.**—The cost-sharing requirements of section 16352 of this title shall apply to any project carried out under this section.

(e) **【AUTHORIZATION OF APPROPRIATIONS.**—There are authorized to be appropriated such sums as are necessary to carry out this section.】 *AUTHORIZATION OF APPROPRIATION.—There is authorized to be appropriated to carry out this section \$5,000,000 for each of fiscal years 2020 through 2024.*

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ENERGY POLICY ACT OF 2005

Public Law 109–58, as Amended

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TITLE II—RENEWABLE ENERGY

Subtitle A—General Provisions

* * * * *

SEC. 203. FEDERAL PURCHASE REQUIREMENT.

(a) REQUIREMENT.—The President, acting through the Secretary, shall seek to ensure that, to the extent economically feasible and technically practicable, of the total amount of electric energy the Federal Government consumes during any fiscal year, the following amounts shall be renewable energy:

- (1) Not less than 3 percent in fiscal years 2007 through 2009.
- (2) Not less than 5 percent in fiscal years 2010 through 2012.
- (3) Not less than 7.5 percent in fiscal year 2013 and each fiscal year thereafter.

(b) DEFINITIONS.—In this section:

(1) BIOMASS.—The term “biomass” means any lignin waste material that is segregated from other waste materials and is determined to be nonhazardous by the Administrator of the Environmental Protection Agency and any solid, nonhazardous, cellulosic material that is derived from—

(A) any of the following forest-related resources: mill residues, precommercial thinnings, slash, and brush, or non-merchantable material;

(B) solid wood waste materials, including waste pallets, crates, dunnage, manufacturing and construction wood wastes (other than pressure-treated, chemically-treated, or painted wood wastes), and landscape or right-of-way tree trimmings, but not including municipal solid waste (garbage), gas derived from the biodegradation of solid waste, or paper that is commonly recycled;

(C) agriculture wastes, including orchard tree crops, vineyard, grain, legumes, sugar, and other crop by-products or residues, and livestock waste nutrients; or

(D) a plant that is grown exclusively as a fuel for the production of electricity.

(2) RENEWABLE ENERGY.—The term “renewable energy” means electric energy ~~generated from~~ *produced from, or, in the case of thermal energy resulting from a thermal energy project placed in service after December 31, 2018, thermal energy generated from, or avoided by,* solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project.

(c) CALCULATION.—~~For purposes~~

(1) *IN GENERAL.*—*For Purposes* of determining compliance with the requirement of this section, the amount of renewable energy shall be doubled if—

~~[(1)]~~ (A) the renewable energy is produced and used on-site at a Federal facility;

~~[(2)]~~ (B) the renewable energy is produced on Federal lands and used at a Federal facility; or

【(3)】 (C) the renewable energy is produced on Indian land as defined in title XXVI of the Energy Policy Act of 1992 (25 U.S.C. 3501 et seq.) and used at a Federal facility.

(2) *SEPARATE CALCULATION.*—

(A) *IN GENERAL.*—*For purposes of determining compliance with the requirement of this section, any energy consumption that is avoided through the use of renewable energy shall be considered to be renewable energy produced.*

(B) *DENIAL OF DOUBLE BENEFIT.*—*Avoided energy consumption that is considered to be renewable energy produced under subparagraph (A) shall not also be counted for purposes of achieving compliance with another Federal energy efficiency goal.*

(d) *REPORT.*—Not later than April 15, 2007, and every 2 years thereafter, the Secretary shall provide a report to Congress on the progress of the Federal Government in meeting the goals established by this section.

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UNITED STATES CODE

TITLE 10—ARMED FORCES

* * * * *

CHAPTER 141—MISCELLANEOUS PROCUREMENT PROVISIONS

* * * * *

§ 2410q. Multiyear contracts: purchase of electricity from renewable energy sources

(a) *MULTIYEAR CONTRACT AUTHORIZED.*—Subject to subsection (b), the Secretary of Defense may enter into a contract for a period not to exceed 10 years for the purchase of electricity from sources of renewable energy, as that term is defined in section 【203(b)(2) of the Energy Policy Act of 2005 (42 U.S.C. 15852(b)(2)).】 *section 203(b) of the Energy Policy Act of 2005 (42 U.S.C. 15852(b)).*

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GEOTHERMAL STEAM ACT OF 1970

Public Law 91–581, as Amended

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SEC. 4. LEASING PROCEDURES.

(a) *NOMINATIONS.*—The Secretary shall accept nominations of land to be leased at any time from qualified companies and individuals under this Act.

(b) *COMPETITIVE LEASE SALE REQUIRED.*—

(1) *IN GENERAL.*—Except as otherwise specifically provided by this Act, all land to be leased that is not subject to leasing under subsection (c) shall be leased as provided in this sub-

section to the highest responsible qualified bidder, as determined by the Secretary.

(2) **COMPETITIVE LEASE SALES.**—The Secretary shall hold a competitive lease sale at least once every 2 years for land in a State that has nominations pending under subsection (a) if the land is otherwise available for leasing.

(3) **LANDS SUBJECT TO MINING CLAIMS.**—Lands that are subject to a mining claim for which a plan of operations has been approved by the relevant Federal land management agency may be available for noncompetitive leasing under this section to the mining claim holder.

(4) **LAND SUBJECT TO OIL AND GAS LEASE.**—*Land under an oil and gas lease issued pursuant to the Mineral Leasing Act (30 U.S.C. 181 et seq.) or the Mineral Leasing Act for Acquired Lands (30 U.S.C. 351 et seq.) that is subject to an approved application for permit to drill and from which oil and gas production is occurring may be available for noncompetitive leasing under this section to the holder of the oil and gas lease—*

(A) *on a determination that—*

(i) *geothermal energy will be produced from a well producing or capable of producing oil and gas; and*

(ii) *national energy security will be improved by the issuance of such a lease; and*

(B) *to provide for the coproduction of geothermal energy with oil and gas.*

* * * * *

SEC. 29. LAND SUBJECT TO PROHIBITION ON LEASING.

The Secretary shall not issue any lease under this Act on those land subject to the prohibition provided under section 43 of the Mineral Leasing Act.

SEC. 30. GEOTHERMAL RESOURCE CONFIRMATION TEST PROJECTS.

(a) **DEFINITIONS.**—*In this section:*

(1) **EXTRAORDINARY CIRCUMSTANCES.**—*The term ‘extraordinary circumstances’ has the same meaning given the term in the Department of the Interior Departmental Manual, 516 DM 2.3A(3) and 516 DM 2, Appendix 2 (or successor provisions).*

(2) **GEOTHERMAL RESOURCE CONFIRMATION TEST PROJECT.**—*The term ‘geothermal resource confirmation test project’ means a project of drilling not more than 3 wells into a reservoir to test or explore for geothermal resources—*

(A) *on land for which the Secretary has issued a lease under this Act; and*

(B) *that—*

(i) *is carried out by the holder of the lease;*

(ii) *allows for well testing, such as to confirm temperature, pressure, chemistry, flow rate, and near-wellbore and overall reservoir permeability;*

(iii) *causes—*

(I) *less than 2.5 acres of soil or vegetation disruption at the location of each geothermal exploration well; and*

(II) *not more than an additional 5 acres of soil or vegetation disruption during access to or egress from the test site;*

(iv) is less than 9 inches in bottom-hole diameter;

(v) is developed—

(I) in a manner that does not require off-road motorized access other than to and from the well site along an identified off-road route; and

(II) without the use of high-pressure well stimulation;

(vi) includes the removal of any surface infrastructure other than the wellhead from the site not later than 90 days after the project is completed; and

(vii) requires, not later than 42 months after the date on which the first exploration drilling began, the restoration of the project site to approximately the condition that existed at the time the project begins, unless the site is subsequently used as part of an energy development under the lease.

(b) **CATEGORICAL EXCLUSION.**—Unless extraordinary circumstances exist, a project that the Secretary determines under subsection (c) is a geothermal resource confirmation test project shall be categorically excluded from the requirements for an environmental assessment or an environmental impact statement under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) or section 1508.4 of title 40, Code of Federal Regulations (or a successor regulation).

(c) **PROCESS.**—

(1) **REQUIREMENT TO PROVIDE NOTICE.**—A leaseholder shall provide notice to the Secretary of the intent of the leaseholder to carry out a geothermal resource confirmation test project at least 30 days before the start of drilling under the project.

(2) **REVIEW AND DETERMINATION.**—Not later than 30 days after receipt of a notice of intent under paragraph (1), the Secretary shall, with respect to the project described in the notice of intent—

(A) determine if the project is a geothermal resource confirmation test project;

(B) notify the leaseholder of such determination; and

(C) provide public notice of the determination.

(3) **OPPORTUNITY TO REMEDY.**—If the Secretary determines under paragraph (2)(A) that the project is not a geothermal resource confirmation test project, the Secretary shall—

(A) include in such notice clear and detailed findings on any deficiencies in the project that resulted in such determination; and

(B) allow the leaseholder to remedy any such deficiencies and resubmit the notice of intent under paragraph (1).

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GEOHERMAL ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACT OF 1974

Public Law 93–410, as Amended

* * * * *

【AN ACT

【To further the conduct of research, development, and demonstrations in geothermal energy technologies, to establish a Geothermal Energy Coordination and Management Project, to provide for the carrying out of research and development in geothermal energy technology, to carry out a program of demonstrations in technologies for the utilization of geothermal resources, to establish a loan guaranty program for the financing of geothermal energy development, and for other purposes.

【Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

【SHORT TITLE

【SECTION 1. This Act may be cited as the “Geothermal Energy Research, Development, and Demonstration Act of 1974”.

【FINDINGS

【SEC. 2. The Congress hereby finds that—

【(1) the Nation is currently suffering a critical shortage of environmentally acceptable forms of energy;

【(2) the inadequate organizational structures and levels of funding for energy research have limited the Nation’s current and future options for meeting energy needs;

【(3) electric energy is a clean and convenient form of energy at the location of its use and is the only practicable form of energy in some modern applications, but the demand for electric energy in every region of the United States is taxing all of the alternative energy sources presently available and is projected to increase; some of the sources available for electric power generation are already in short supply, and the development and use of other sources presently involve undesirable environmental impacts;

【(4) the Nation’s critical energy problems can be solved only if a national commitment is made to dedicate the necessary financial resources, and enlist the cooperation of the private and public sectors, in developing geothermal resources and other nonconventional sources of energy;

【(5) the conventional geothermal resources which are presently being used have limited total potential; but geothermal resources which are different from those presently being used, and which have extremely large energy content, are known to exist;

【(6) some geothermal resources contain energy in forms other than heat; examples are methane and extremely high pressures available upon release as kinetic energy;

【(7) some geothermal resources contain valuable byproducts such as potable water and mineral compounds which should be processed and recovered as national resources;

【(8) technologies are not presently available for the development of most of these geothermal resources, but technologies for the generation of electric energy from geothermal resources are potentially economical and environmentally desirable, and the development of geothermal resources offers possibilities of process energy and other nonelectric applications;

[(9) much of the known geothermal resources exist on the public lands;

[(10) Federal financial assistance is necessary to encourage the extensive exploration, research, and development in geothermal resources which will bring these technologies to the point of commercial application;

[(11) the advancement of technology with the cooperation of private industry for the production of useful forms of energy from geothermal resources is important with respect to the Federal responsibility for the general welfare, to facilitate commerce, to encourage productive harmony between man and his environment, and to protect the public interest; and

[(12) the Federal Government should encourage and assist private industry through Federal assistance for the development and demonstration of practicable means to produce useful energy from geothermal resources with environmentally acceptable processes.]

【DEFINITIONS

【SEC. 3. For the purposes of this Act—

[(1) the term “geothermal resources” means (A) all products of geothermal processes, embracing indigenous steam, hot water, and brines, (B) steam and other gases, hot water and hot brines, resulting from water, gas, or other fluids artificially introduced into geothermal formations, and (C) any byproduct derived from them;

[(2) the term “byproduct” means any mineral or minerals which are found in solution or in association with geothermal resources and which have a value of less than 75 percent of the value of the geothermal steam and associated geothermal resources or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves;

[(3) “pilot plant” means an experimental unit of small size used for early evaluation and development of new or improved processes and to obtain technical, engineering, and cost data;

[(4) “demonstration plant” means a complete facility which produces electricity, heat energy, or useful byproducts for commercial disposal from geothermal resources and which will make a significant contribution to the knowledge of full-size technology, plant operation, and process economics;

[(5) the term “Project” means the Geothermal Energy Coordination and Management Project established by section 1121(a) of this title;

[(6) the term “fund” means the Geothermal Resources Development Fund established by section 1144(a) of this title; and

[(7) the term “Chairman” means the Chairman of the Project.】

【TITLE I—GEOTHERMAL ENERGY COORDINATION AND MANAGEMENT PROJECT

【ESTABLISHMENT

【SEC. 101. (a) There is hereby established the Geothermal Energy Coordination and Management Project.

【(b) (1) The Project shall be composed of six members as follows:

【(A) one appointed by the President;

【(B) an Assistant Director of the National Science Foundation;

【(C) an Assistant Secretary of the Department of the Interior;

【(D) an Associate Administrator of the National Aeronautics and Space Administration;

【(E) the Assistant Administrator of the Energy Research and Development Administration for Solar, Geothermal, and Advanced Energy Systems;

【(F) an Assistant Administrator of the Federal Energy Administration;

【(G) an Assistant Administrator of the Environmental Protection Agency;

【(H) an Assistant Secretary of the Treasury; and

【(I) an Assistant Secretary of Agriculture.

【(2) The President shall designate the Assistant Administrator of the Energy Research and Development Administration for Solar, Geothermal, and Advanced Energy Systems to serve as Chairman of the Project.

【(3) If the individual appointed under paragraph (1)(A) of this subsection is an officer or employee of the Federal Government, he shall receive no additional pay on account of his service as a member of the Project. If such individual is not an officer or employee of the Federal Government, he shall be entitled to receive the daily equivalent of the annual rate of basic pay in effect for level IV of the Executive Schedule (5 U.S.C. 5315) for each day (including traveltime) during which he is engaged in the actual performance of duties vested in the Project.

【(c) The Project shall have overall responsibility for the provision of effective management and coordination with respect to a national geothermal energy research, development, and demonstration program. Such program shall include—

【(1) the determination and evaluation of the resource base;

【(2) research and development with respect to exploration, extraction, and utilization technologies;

【(3) the demonstration of appropriate technologies; and

【(4) the loan guaranty program under subchapter II.

【(d)(1) The Project shall carry out its responsibilities under this section acting through the following Federal agencies:

【(A) the Department of the Interior, the responsibilities of which shall include evaluation and assessment of the resource base, including development of exploration technologies;

【(B) the National Aeronautics and Space Administration, the responsibilities of which shall include the provision of contract management capability, evaluation and as-

assessment of the resource base, and the development of technologies pursuant to section 1122(b) of this title;

[(C) the Atomic Energy Commission, the responsibilities of which shall include the development of technologies; and

[(D) the National Science Foundation, the responsibilities of which shall include basic and applied research.

[(2) Upon request of the Project, the head of any such agency is authorized to detail or assign, on a reimbursable basis or otherwise, any of the personnel of such agency to the Project to assist it in carrying out its responsibilities under this chapter.

[(e) The Project shall have exclusive authority with respect to the establishment or approval of programs or projects initiated under this chapter, except that the agency involved in any particular program or project shall be responsible for the operation and administration of such program or project.]

【PROGRAM DEFINITION

【SEC. 102. (a)(1) The Chairman, acting through the Administrator of the National Aeronautics and Space Administration, is authorized and directed to prepare a comprehensive program definition of an integrated effort and commitment for effectively developing geothermal energy resources. Such Administrator, in preparing such comprehensive program definition, is authorized to consult with other Federal agencies and non-Federal entities.

[(2) The Chairman shall transmit such comprehensive program definition to the President and to each House of the Congress. Interim reports shall be transmitted not later than November 30, 1974, and not later than January 31, 1975. Such comprehensive program definition shall be transmitted as soon as possible thereafter, but in any case not later than August 31, 1975.

[(3) As part of the comprehensive program definition required by paragraph (1) of this subsection, the Chairman, acting through the United States Geological Survey, shall transmit to the President and to each House of the Congress a schedule and objectives for the inventorying of geothermal resources.

[(b) The National Aeronautics and Space Administration is authorized to undertake and carry out those programs assigned to it by the Project.]

【RESOURCE INVENTORY AND ASSESSMENT PROGRAM

【SEC. 103. (a) The Chairman shall initiate a resource inventory and assessment program with the objective of making regional and national appraisals of all types of geothermal resources, including identification of promising target areas for industrial exploration and development. The specific goals shall include—

[(1) the improvement of geophysical, geochemical, geological, and hydrological techniques necessary for locating and evaluating geothermal resources;

[(2) the development of better methods for predicting the power potential and longevity of geothermal reservoirs;

[(3) the determination and assessment of the nature and power potential of the deeper unexplored parts of high temperature geothermal convection systems; and

[(4) the survey and assessment of regional and national geothermal resources of all types.

[(b) The Chairman, acting through the United States Geological Survey and other appropriate agencies, shall—

[(1) develop and carry out a general plan for the orderly inventorying of all forms of geothermal resources of the Federal lands and, where consistent with property rights and determined by the Chairman to be in the national interest, of non-Federal lands;

[(2) conduct regional surveys, based upon such a general plan, using innovative geological, geophysical, geochemical, and stratigraphic drilling techniques, which will lead to a national inventory of geothermal resources in the United States;

[(3) publish and make available maps, reports, and other documents developed from such surveys to encourage and facilitate the commercial development of geothermal resources for beneficial use and consistent with the national interest;

[(4) make such recommendations for legislation or administrative regulations as may from time to time appear to be necessary to make Federal leasing, environmental and taxing policy for geothermal resources consistent with known inventories of various resource types, with the current state of technologies for geothermal energy development, and with current evaluations of the environmental impacts of such development; and

[(5) participate with appropriate Federal agencies and non-Federal entities in research to develop, improve, and test technologies for the discovery and evaluation of all forms of geothermal resources, and conduct research into the principles controlling the location, occurrence, size, temperature, energy content, producibility, and economic lifetimes of geothermal reservoirs.]

[SEC. 104. (a) The Chairman, acting through the appropriate Federal agencies and in cooperation with non-Federal entities, shall initiate a research and development program for the purpose of resolving all major technical problems inhibiting the fullest possible commercial utilization of geothermal resources in the United States. The specific goals of such programs shall include—

[(1) the development of effective and efficient drilling methods to operate at high temperatures in formations of geothermal interest;

[(2) the development of reliable predictive methods and control techniques for the production of geothermal resources from reservoirs;

[(3) the exploitation of new concepts for fracturing rock to permit recovery of contained heat reserves;

[(4) the improvement of equipment and technology for the extraction of geothermal resources from reservoirs;

[(5) the development of improved methods for converting geothermal resources and byproducts to useful forms;

[(6) the development of improved methods for controlling emissions and wastes from geothermal utilization facilities, including new monitoring methods to any extent necessary;

[(7) the development and evaluation of waste disposal control technologies and the evaluation of surface and subsurface environmental effects of geothermal development;

[(8) the improvement of the technical capability to predict environmental impacts resulting from the development of geo-

thermal resources, the preparation of environmental impact statements, and the assuring of compliance with applicable standards and criteria;

[(9) the identification of social, legal, and economic problems associated with geothermal development (both locally and regionally) for the purpose of developing policy and providing a framework of policy alternatives for the commercial utilization of geothermal resources;

[(10) the provision for an adequate supply of scientists to perform required geothermal research and development activities; and

[(11) the establishment of a program to encourage States to establish and maintain geothermal resources clearinghouses, which shall serve to (A) provide geothermal resources developers with information with respect to applicable local, State, and Federal laws, rules, and regulations, (B) coordinate the processing of permit applications, impact statements, and other information which geothermal resources developers are required to provide, (C) encourage uniformity with respect to local and State laws, rules, and regulations with respect to geothermal resources development, and (D) encourage establishment of land use plans, which would include zoning for geothermal resources development and which would assure that geothermal resources developers will be able to carry out development programs to the production stage.

[(b) The Chairman, acting through the appropriate Federal agencies and in cooperation with non-Federal entities, shall implement a coordinated program of research and development in order to demonstrate the technical means for the extraction and utilization of the resource base, including any by-products of such base, and in order to accomplish the goals established by subsection (a). Research authorized by this chapter having potential applications in matters other than geothermal energy may be pursued to the extent that the findings of such research can be published in a form for utilization by others.]

【DEMONSTRATION

【SEC. 105. (a) The Chairman, acting through the appropriate Federal agencies and in cooperation with non-Federal entities, shall initiate a program to design and construct geothermal demonstration plants. The specific goals of such program shall include—

[(1) the development of economical geothermal resources production systems and components which meet environmental standards;

[(2) the design of plants to produce electric power and, where appropriate, the large-scale production and utilization of any useful by-products;

[(3) the involvement of engineers, analysts, technicians, and managers from industry field and powerplant development, which shall lead to the early industrial exploitation of advanced geothermal resources;

[(4) the provision for an adequate supply of trained geothermal engineers and technicians;

[(5) the provision of experimental test beds for component testing an evaluation by laboratories operated by the Federal Government, industry, or institutions of higher education;

[(6) the construction and operation of pilot plants; and

[(7) the construction and operation of demonstration plants.

[(b) In carrying out his responsibilities under this section, the Chairman, acting through the appropriate Federal agencies, and in cooperation with non-Federal entities, may provide for the establishment of one or more demonstration projects utilizing each geothermal resource base involved, which shall include, as appropriate, all of the exploration, siting, drilling, pilot plant construction and operation, demonstration plant construction and operation, and other facilities and activities which may be necessary for the generation of electric energy and the utilization of geothermal resource byproducts.

[(c) The Chairman, acting through the appropriate Federal agencies, is authorized to investigate and enter into agreements for the cooperative development of facilities to demonstrate the production of energy from geothermal resources. The responsible Federal agency may consider—

[(1) cooperative agreements with utilities and non-Federal governmental entities for construction of facilities to produce energy for commercial disposition; and

[(2) cooperative agreements with other Federal agencies for the construction and operation of facilities to produce energy for direct Federal consumption.

[(d) The responsible Federal agency is authorized to investigate the feasibility of, construct, and operate, demonstration projects without entering into cooperative agreements with respect to such projects, if the Chairman finds that—

[(1) the nature of the resource, the geographical location, the scale and engineering design of the facilities, the techniques of production, or any other significant factor of the proposal offers opportunities to make important contributions to the general knowledge of geothermal resources, the techniques of its development, or public confidence in the technology; and

[(2) there is no opportunity for cooperative agreements with any utility or non-Federal governmental entity willing and able to cooperate in the demonstration project under subsection (c)(1), and there is no opportunity for cooperative agreements with other Federal agencies under subsection (c)(2).

[(e) Before favorably considering proposals under subsection (c), the responsible Federal agency must find that—

[(1) the nature of the resource, the geographical location, the scale and engineering design of the facilities, the techniques of production, or any other significant factor of the proposal offers opportunities to make important contributions to the general knowledge of geothermal resources, the techniques of its development, or public confidence in the technology;

[(2) the development of the practical benefits as set forth in paragraph (1) of this subsection are unlikely to be accomplished without such cooperative development; and

[(3) where non-Federal participants are involved, the proposal is not eligible for adequate Federal assistance under the loan guaranty provisions of subchapter II of this chapter or

such assistance would not be adequate to satisfy the goals and requirements of the demonstration program under this section.

[(f) If the estimate of the Federal investment with respect to construction and operation costs of any demonstration project proposed to be established under this section exceeds \$10,000,000, no amount may be appropriated for such project except as specifically authorized by legislation hereafter enacted by the Congress.

[(g)(1) At the conclusion of the program under this section or as soon thereafter as may be practicable, the responsible Federal agencies shall, by sale, lease, or otherwise, dispose of all Federal property interests which they have acquired pursuant to this section (including mineral rights) in accordance with existing law and the terms of the cooperative agreements involved.

[(2) The agency involved shall, under appropriate agreements or other arrangements, provide for the disposition of geothermal resource byproducts of the project administered by such agency.]

SCIENTIFIC AND TECHNICAL EDUCATION

[SEC. 106. (a) It is the policy of the Congress to encourage the development and maintenance of programs through which there may be provided the necessary trained personnel to perform required geothermal research, development, and demonstration activities under sections 1123, 1124, and 1125 of this title.

[(b) The National Science Foundation is authorized to support programs of education in the sciences and engineering to carry out the policy of subsection (a). Such support may include fellowships, traineeships, technical training programs, technologist training programs, and summer institute programs.

[(c) The National Science Foundation is authorized and directed to coordinate its actions, to the maximum extent practicable, with the Project or any permanent Federal organization or agency having jurisdiction over the energy research and development functions of the United States, in determining the optimal selection of programs of education to carry out the policy of subsection (a).

[(d) The National Science Foundation is authorized to encourage, to the maximum extent practicable international participation and cooperation in the development and maintenance of programs of education to carrying out the policy of subsection (a).]

[TITLE II—LOAN GUARANTIES

[ESTABLISHMENT OF LOAN GUARANTY PROGRAM

[SEC. 201. (a) It is the policy of the Congress to encourage and assist in the commercial development of practicable means to produce useful energy from geothermal resources with environmentally acceptable processes. Accordingly, it is the policy of the Congress to facilitate such commercial development by authorizing the Chairman of the Project to designate an appropriate Federal agency to guarantee loans for such purposes.

[(b) In order to encourage the commercial production of energy from geothermal resources, the head of the designated agency is authorized to, in consultation with the Secretary of the Treasury, guarantee, and to enter into commitments to guarantee, lenders

against loss of principal or interest on loans made by such lenders to qualified borrowers for the purposes of—

[(1) the determination and evaluation of the resource base;
 [(2) research and development with respect to extraction and utilization technologies;

[(3) acquiring rights in geothermal resources;

[(4) development, construction, and operation of facilities for the demonstration or commercial production of energy using geothermal resources; or

[(5) construction and operation of a new commercial, agricultural, or industrial structure or facility or modification and operation of an existing commercial, agricultural, or industrial structure or facility, when geothermal hot water or steam is to be used within or by such structure or facility, or modification thereto, for the purposes of space heating or cooling, industrial or agricultural processes, onsite generation of electricity for use other than for sale or resale in commerce, other commercial applications, or combinations of applications separately eligible under this subchapter for loan guarantee assistance.

[(c) Any guaranty under this subchapter shall apply only to so much of the principal amount of any loan as does not exceed 75 percent of the aggregate cost of the project with respect to which the loan is made, except that any guarantee made for a loan to an electric, housing, or other cooperative, or to a municipality (as defined in section 796(7) of title 16), may apply to so much of the principal amount of the loan as does not exceed 90 percent of the aggregate cost of the project. In determining the aggregate cost of a project for purposes of the preceding sentence, there shall be excluded the cost of constructing electrical transmission lines to the extent that the cost of constructing such lines exceeds 25 percent of the aggregate cost of the project (as determined without regard to this sentence); except that the Secretary may waive or limit the application of this sentence with respect to any project located in the State of Hawaii upon a finding that such project is remote from the area of primary consumption, that a transmission line is required before the geothermal reservoir can be developed, and that the particular transmission line involved will be used for more than the plant which is the subject of the loan guarantee. In the case of a guaranty for the purposes specified in subsection (b)(5), the aggregate cost of the project shall be deemed to be that portion of the total cost of construction and operation which is directly related to the utilization of geothermal energy within the structure or facility in question, except that the aggregate cost of the project with respect to which the loan is made may be the total cost including construction and operation in cases where the facility or structure has been located near a geothermal energy resource predominantly for the purpose of utilizing geothermal energy, or as determined by the Secretary of Energy the economic viability of the project is substantially dependent upon the performance of the geothermal reservoir.

[(d) Loan guaranties under this subchapter shall be on such terms and conditions as the head of the designated agency determines, except that a guaranty shall be made under this subchapter only if—

[(1) the loan bears interest at a rate not to exceed such annual per centum on the principal obligation outstanding as the head of

the designated agency determines to be reasonable, taking into account the range of interest rates prevailing in the private sector for similar loans and risks by the United States;

[(2) the terms of such loan require full repayment over a period not to exceed thirty years, or the useful life of any physical asset to be financed by such loan, whichever is less (as determined by the head of the designated agency);

[(3) in the judgment of the head of the designated agency, the amount of the loan (when combined with amounts available to the qualified borrower from other sources) will be sufficient to carry out the project; and

[(4) in the judgment of the head of the designated agency, there is reasonable assurance of repayment of the loan by the qualified borrower of the guaranteed indebtedness.

[(e) The amount of the guaranty for any loan for a project shall not exceed \$100,000,000: *Provided*, That in the case of a guaranty under subsection (b)(5), the amount of the guaranty for any loan for a project shall not exceed \$50,000,000 and the amount of the guaranty for any combination of loans for any single qualified borrower shall not exceed \$200,000,000, unless the Secretary of Energy determines in writing that a guaranty in excess of these amounts is in the national interest. Any such determination shall be submitted to the Speaker of the House and the Committee on Science, Space, and Technology of the House of Representatives, and to the President of the Senate and the Committee on Energy and Natural Resources of the Senate, accompanied by a full and complete report on the proposed project and guaranty. The proposed guaranty or commitment to guarantee shall not be finalized under authority granted by this chapter prior to the expiration of thirty calendar days (not including any date on which either House of Congress is not in session) from the date on which such report is received by the Speaker of the House and the President of the Senate.

[(f) As used in this subchapter, the term "qualified borrower" means any public or private agency, institution, association, partnership, corporation, political subdivision, or other legal entity which (as determined by the head of the designated agency) has presented satisfactory evidence of an interest in geothermal resources and is capable of performing research or completing the development and production of energy in an acceptable manner.

[PAYMENT OF INTEREST

[(g) With respect to any guaranty which is issued after February 25, 1978, by, or in behalf of, any State, political subdivision, or Indian tribe and which is either guaranteed under, or supported by taxes levied by said issuer which are guaranteed under this subchapter and for which the interest paid on such obligation and received by the purchaser thereof is included in gross income for the purposes of chapter 1 of title 26, the Secretary of Energy shall pay to such issuer out of the fund established by this subchapter such portion of the interest on such obligations, as determined by the Secretary of Energy, in consultation with the Secretary of the Treasury, to be appropriated after taking into account current market yields (1) on obligations of such issuer, if any, or (2) on other obligations with similar terms and conditions, the interest on

which is not so included in gross income for purposes of chapter 1 of title 26, and in accordance with such terms and conditions as the Secretary of Energy shall require in consultation with the Secretary of the Treasury.

[PERIOD OF GUARANTIES AND INTEREST ASSISTANCE]

[(h) The full faith and credit of the United States is pledged to the payment of all guaranties issued under this subchapter with respect to principal and interest.

[(i) The Secretary of Energy shall charge and collect fees for guaranties in amounts sufficient in his judgment to cover applicable administrative costs and probable losses on guaranteed obligations, but in any event not to exceed 1 per centum per annum of the outstanding indebtedness covered by each guaranty. Fees collected under this subsection shall be deposited in the fund established by this subchapter.

[(j) The Secretary of the Treasury shall insure to the maximum extent feasible that the timing, interest rate, and substantial terms and conditions of any guaranty exceeding \$25,000,000 will have the minimum possible impact on the capital markets of the United States, taking into account other Federal direct and indirect commercial securities activities.]

[SEC. 202. (a) If there is a default by the borrower, as defined in regulations promulgated by the Secretary of Energy and set forth in the guarantee contract, the holder of the obligation shall have the right to demand payment of the unpaid amount from the Secretary of Energy. Within such period as may be specified in the guarantee or related agreements, the Secretary of Energy shall pay to the holder of the obligation the unpaid interest on, and unpaid principal of the guaranteed obligation as to which the borrower has defaulted, unless the Secretary of Energy finds that there was no default by the borrower in the payment of interest or principal or that such default has been remedied. Nothing in this section shall be construed to preclude any forbearance by the holder of the obligation for the benefit of the borrower which may be agreed upon by the parties to the guaranteed obligation and approved by the Secretary of Energy.

[(b) If the Secretary of Energy makes a payment under subsection (a) of this subsection,¹ the Secretary of Energy shall be subrogated to the rights of the recipient of such payment as specified in the guarantee or related agreements including, where appropriate, the authority (notwithstanding any other provision of law) to complete, maintain, operate, lease, or otherwise dispose of any property acquired pursuant to such guarantee or related agreements, or to permit the borrower, pursuant to an agreement with the Secretary of Energy, to continue to pursue the purposes of the project if the Secretary of Energy determines this to be in the public interest. The rights of the Secretary of Energy with respect to any property acquired pursuant to such guarantee or related agreements, shall be superior to the rights of any other person with respect to such property.

[(c) In the event of a default on any guarantee under this subchapter, the Secretary of Energy shall notify the Attorney General, who shall take such action as may be appropriate to recover the amounts of any payments made under subsection (a), including any

payment of principal and interest under subsection (d), from such assets of the defaulting borrower as are associated with the project, or from any other security included in the terms of the guarantee.

[(d) With respect to any obligation guaranteed under this subchapter, the Secretary of Energy is authorized to enter into a contract to pay, and to pay, holders of the obligation, for and on behalf of the borrower, from the Geothermal Resources Development Fund, the principal and interest payments which become due and payable on the unpaid balance of such obligation if the Secretary of Energy finds that—

[(1) the borrower is unable to meet such payments and is not in default; it is in the public interest to permit the borrower to continue to pursue the purposes of such project; and the probable net benefit to the Federal Government in paying such principal and interest will be greater than that which would result in the event of a default;

[(2) the amount of such payment which the Secretary of Energy is authorized to pay shall be no greater than the amount of principal and interest which the borrower is obligated to pay under the loan agreement; and

[(3) the borrower agrees to reimburse the Secretary of Energy for such payment on terms and conditions, including interest, which are satisfactory to the Secretary of Energy.]

【GEOTHERMAL RESOURCES DEVELOPMENT FUND

【SEC. 204. (a) There is established in the Treasury of the United States a Geothermal Resources Development Fund, which shall be available to the head of the designated agency for carrying out the loan guaranty and interest assistance program authorized by this subchapter, including the payment of administrative expenses incurred in connection therewith. Moneys in the fund not needed for current operations may, with the approval of the Secretary of the Treasury, be invested in bonds or other obligations of, or guaranteed by, the United States.

[(b) There shall be paid into the fund the amounts appropriated pursuant to section 1164(c) of this title and such amounts as may be returned to the United States pursuant to section 1142(b) of this title, and the amounts in the fund shall remain available until expended, except that after the expiration of the ten-year period established by section 1143 of this title, such amounts in the fund which are not required to secure outstanding guaranty obligations shall be paid into the general fund of the Treasury.

[(c) If at any time the moneys available in the fund are insufficient to enable the Secretary of Energy to discharge his responsibilities under this subchapter, he shall issue to the Secretary of the Treasury notes or other obligations in such forms and denominations bearing such maturities, and subject to such terms and conditions, as may be prescribed by the Secretary of the Treasury. This borrowing authority shall be effective only to such extent or in such amounts as are specified in appropriation Acts. Such authorizations may be without fiscal year limitations. Redemption of such notes or obligations shall be made by the Secretary of Energy from appropriations or other moneys available under this section. Such notes or other obligations shall bear interest at a rate determined by the Secretary of the Treasury, which shall not be less than a

rate determined by taking into consideration the average market yield on outstanding marketable obligations of the United States of comparable maturities during the month preceding the issuance of the notes or other obligations. The Secretary of the Treasury shall purchase any notes or other obligations issued hereunder and for that purpose he is authorized to use as a public debt transaction the proceeds from the sale of any securities issued under chapter 31 of title 31, and the purposes for which securities may be issued under that chapter are extended to include any purchase of such notes or obligations. The Secretary of the Treasury may at any time sell any of the notes or other obligations acquired by him under this subsection. All redemptions, purchases, and sales by the Secretary of the Treasury of such notes or other obligations shall be treated as public debt transactions of the United States.】

【COMMUNITY IMPACT ASSISTANCE

【SEC. 205. (a) The Secretary of Energy, for any project which has a guarantee under this subchapter of not less than \$50,000,000 and which will have an intended operating life of not less than five years to satisfy the purposes under this subchapter for which the guarantee has been made, shall endeavor to insure that, taking into consideration appropriate local community action and all reasonably available forms of assistance under this section and other Federal and State statutes, that¹ the impacts resulting from the proposed project have been fully evaluated by the borrower, the Secretary of Energy, and the Governor of the affected State, and that effective steps have been taken or will be taken in a timely manner to finance community planning and development costs resulting from such project under this section, if applicable under other provisions of law, or by other means. When the project will be located on leased Federal lands, the Secretary of Energy shall specifically review State and local actions under section 9(a) of the Mineral Leasing Act Amendments of 1976 (Public Law 94-377) and insure that any funds made available to the State pursuant to such section 9(a) are used to finance such planning and development costs before any Federal assistance under subsection (c) of this section is considered or authorized.

【(b) The Secretary of Energy, for projects not included under subsection (a), may in his discretion consider the community impacts which may result from such projects, and may take such actions, under authority directly available to him under other statutes or in coordination with other Federal agencies or the State, as he considers necessary and appropriate to insure timely and effective planning and financing for such community impacts.

【(c)(1) In order to discharge his responsibilities under subsection (a), and in accordance with such rules and regulations as the Secretary of Energy in consultation with the Secretary of the Treasury shall prescribe, and subject to such terms and conditions as he deems appropriate, the Secretary of Energy is authorized, for the purposes of financing essential community development and planning which directly result from, or are necessitated by, a project under subsection (a), to—

【(A) guarantee and make commitments to guarantee the payment of interest on, and the principal balance of, obli-

gations for such financing issued by eligible States, political subdivisions, or Indian tribes,

[(B) guarantee and make commitments to guarantee the payment of taxes imposed on such project by eligible non-Federal taxing authorities which taxes are earmarked by such authorities to support the payment of interest and principal on obligations for such financing, and

[(C) require that the qualified borrower receiving assistance for a project under this section advance sums to eligible States, political subdivisions, and Indian tribes to pay for the financing of such development and planning: *Provided*, That the State, political subdivision, or Indian tribe agrees to provide tax abatement credits over the life of the project for such payments by such applicant.

[(2) No guarantee or commitment to guarantee under paragraph (1) of this subsection shall exceed \$1,000,000.

[(3) In the event of any default by the borrower in the payment of taxes guaranteed by the Secretary of Energy under this section, the Secretary of Energy shall pay out of the fund established by this subchapter such taxes at the time or times they may fall due, and shall have by reason of such payment a claim against the borrower for all sums paid plus interest.

[(4) If after consultation with² State, political subdivision, or Indian tribe, the Secretary of Energy finds that the financial assistance programs of paragraph (1) of this section³ will not result in sufficient funds to carry out the purposes of this subsection, then the Secretary of Energy may—

[(A) make direct loans to the eligible States, political subdivisions, or Indian tribes for such purposes: *Provided*, That such loans shall be made on such reasonable terms and conditions as the Secretary of Energy shall prescribe: *Provided further*, That the Secretary of Energy may waive repayment of all or part of a loan made under this paragraph, including interest, if the State or political subdivision or Indian tribe involved demonstrates to the satisfaction of the Secretary of Energy that due to a change in circumstances there will be net adverse impacts resulting from such project that would probably cause such State, subdivision, or tribe to default on the loan; or

[(B) require that any community development and planning costs which are associated with, or result from, such project, and which are determined by the Secretary of Energy to be appropriate for such inclusion, shall be included in the aggregate costs of the project.

[(5) The Secretary of Energy is further authorized to make grants to States, political subdivisions, or Indian tribes for studying and planning for the potential economic, environmental, and social consequences of projects and for establishing related management expertise.

[(6) At any time the Secretary of Energy may, in consultation with the Secretary of the Treasury, redeem, in whole or in part, out of the fund established by this section, the debt obligations guaranteed or the debt obligations for which tax payments are guaranteed under this subsection.

[(7) When one or more States, political subdivisions, or Indian tribes would be eligible for assistance under this subsection, but for the fact that construction and operation of the project occurs outside its jurisdiction, the Secretary of Energy is authorized to provide, to the greatest extent possible, arrangements for equitable sharing of such assistance.

[(8) Such amounts as may be necessary for direct loans and grants pursuant to this subsection shall be available as provided in annual authorization Acts.

[(9) The Secretary of Energy, if appropriate, shall provide assistance in the financing of up to 100 per centum of the costs of the required community development and planning pursuant to this section.

[(10) In carrying out the provisions of this section, the Secretary of Energy shall provide that title to any facility receiving financial assistance under this section shall vest in the applicable State, political subdivision, or Indian tribe, as appropriate, and in the case of default by the borrower on a loan guarantee made or committed under subsection (b) of this section, such facility shall not be considered a project asset for the purposes of section 1142 of this title.

[(11) The Secretary of Energy shall not use his authority under this subsection to provide Federal assistance unless any Federal funds transferred pursuant to section 9(a) of the Mineral Leasing Act Amendments of 1976 (Public Law 94-377) to the State from the lease of Federal land for or associated with the project have been or, with assurance, will be committed, to the maximum extent allowable under Federal statutes, to financing such essential community development or planning directly resulting from, or necessitated by, a project on leased Federal lands.]

[TITLE III—GENERAL PROVISIONS]

[PROTECTION OF ENVIRONMENT]

[SEC. 301. In the conduct of its activities, the Project and any participating public or private persons or agencies shall place particular emphasis upon the objective of assuring that the environment and the safety of persons or property are effectively protected; and the program under subchapter I shall include such special research and development as may be necessary for the achievement of that objective.

[REPORTING REQUIREMENTS]

[SEC. 302.

[(b) No later than one year after the termination of each demonstration project under section 1125 of this title, the Chairman of the Project shall submit to the President and the Congress a final report on the activities of the Project related to each project, including his recommendations with respect to any further legislative, administrative, and other actions which should be taken in support of the objectives of this chapter.]

[TRANSFER OF FUNCTIONS]

[SEC. 303. (a) Within sixty days after the effective date of the law creating a permanent Federal organization or agency having

jurisdiction over the energy research and development functions of the United States (or within sixty days after September 3, 1974, if the effective date of such law occurs prior to September 3, 1974), all of the research, development, and demonstration functions (including the loan guaranty program) vested in the Project under this chapter, along with related records, documents, personnel, obligations, and other items to the extent necessary or appropriate, shall, in accordance with regulations prescribed by the Office of Management and Budget, be transferred to and vested in such organization or agency.

[(b) Upon the establishment of a permanent Federal organization or agency having jurisdiction over the energy research and development functions of the United States, and when all research and development (and other) functions of the Project are transferred, the members of the Project may provide advice and counsel to the head of such organization or agency, in accordance with arrangements made at that time.]

【AUTHORIZATION OF APPROPRIATIONS

【SEC. 304. (a) For the fiscal years ending June 30, 1976, and September 30, 1977, 1978, 1979, and 1980, only such sums may be appropriated as the Congress may hereafter authorize by law.

[(b) There are authorized to be appropriated to the National Aeronautics and Space Administration not to exceed \$2,500,000 for the fiscal year ending June 30, 1975, for the purpose of preparing the program definition under section 1122(a) of this title.

[(c) In addition to sums authorized to be appropriated by subsection (b), there are authorized to be appropriated to the fund not to exceed \$50,000,000 annually, such sums to carry out the provisions of the loan guaranty program by the Project under title II.]